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**Rare Plant Assessment and Checklist
for Cumberland Gap National Historical Park**

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Southeast Region**

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RARE PLANT ASSESSMENT AND CHECKLIST
FOR CUMBERLAND GAP NATIONAL HISTORICAL PARK

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ABSTRACT

To produce a rare plant list for Cumberland Gap National Historical Park and make additions to the park's original plant checklist, two years of field work were conducted (1984 and 1985) and the literature was reviewed. A list of 59 rare species was generated. All 59 species occur in the park. None of the entries on the rare plant list are based on species merely expected or possibly occurring in the park. Species on the rare plant list meet one of three criteria: (1) Listed on the rare plant list of Virginia, Kentucky or Tennessee and found in that state in the park (38 entries); (2) Occurrence in states where they may not have been known to occur until recently (6 entries). These new state records may result in these species being added to the respective state rare plant lists; and (3) occurrence in the park and listed on the Virginia, Kentucky or Tennessee list but not known to occur in the listing state in the park (15 entries). For example, a Virginia-listed species might be known only from the Kentucky part of the park. Monitoring of six "priority" species from the park's rare plant list was recommended. A total of 216 species were added to the park's checklist, bringing the overall total to 770 species of vascular plants known to occur in the park.

INTRODUCTION

Cumberland Gap National Historical Park (CUGA) includes 8,208 hectares (20,273 acres) covering three states and four counties. Most of the park lies in the Cumberland Mountains, but includes a section of the neighboring Poor Valley Ridge in the Ridge and Valley physiographic province. This section of the Cumberland Mountains is unusual in that it attains a significant elevation (1,071 m) and has not been strip-mined. A more complete description of the park is included in Appendix A and in Hinkle (1975).

The Federal Endangered Species Act mandates that federal lands be assessed for rare species and the information thus gained be used to formulate management plans that will preserve these species on these lands. Thus, our main purpose was to locate rare plants within CUGA and suggest recommendations for their protection. Our secondary purpose was to revise and complete the park's checklist of vascular plants.

Ross Hinkle's flora for the park (Hinkle 1975) served as the foundation for our work. We also reviewed the specimens from the park herbarium and the species list that is kept with them. The latter had a number of problems, including species on the herbarium list that are not represented by vouchers in the herbarium. Further, many specimens in the park herbarium were clearly not collected in the park, and for many others the collection site is not clear. Because of these problems, we used Hinkle's flora rather than the herbarium list as a starting point. The species list for the Lincoln Memorial University Herbarium, Harrogate, Tennessee, is similar to that for the park and was of limited use in this project. In contrast to these lists, our checklist is entirely based on

herbarium specimens (both ours and those of former collectors) that are known to have been collected in the park.

There have been two park checklists since Hinkle's work. Becky Hood (1975, unpublished) produced a list based on Hinkle but with some additions. Hood's list was not vouchered by specimens, however, and it is unclear if her additions are valid. Hood's list, in turn, was used as the basis for NPFLORA'S "Flora List for Cumberland Gap National Historical Park" (Denver Service Center, 1985). Cranfill (1981) and Medley (1983) give reports of rare plant locations in the Kentucky portion of the park.

METHODS

Field collections began in July 1984 and continued until October 1985. We surveyed the whole park during the first three months and then returned regularly (every two weeks during peak flowering periods) to areas with the highest potential for rare plants. These areas are described in Appendix A. Collections were made of all vascular plants that were additions to Hinkle's preliminary park checklist. The collections were made in a careful, limited way so as not to harm the plant populations. In two cases, photos were used to voucher the species. In other cases partial specimens were collected. We left roots (of perennials), flowers or fruits to reduce the effect of the collection on the plant population. Full specimens were taken only when we knew of many populations in the park or when there were about ten plants in the immediate population. These considerations were also affected by our knowledge of the regional abundance of the involved plants. Identifications were made using standard references (Gleason 1952 and Radford 1968). In some cases special treatments were used; these are cited in the appendices.

We obtained county rare plant records from the Tennessee Valley Authority (Norris, TN), Kentucky Nature Preserves Commission (Frankfort, KY), Tennessee Heritage Program (Nashville, TN), and Virginia Natural Diversity Information Program (Virginia Polytechnic Institute). All rare plants indicated as occurring in the park by the above sources were seen in the field during this investigation (see Results).

The park checklist that we developed was compared with the most current state rare plant lists from Kentucky (Branson 1981, revised August

1984), Tennessee (Tennessee Heritage Program 1983), and Virginia (VA Natural Diversity Information Program 1982, undated revision, received March 1985), as well as the current federal list (U.S. Fish and Wildlife Service 1983). We also included in our park rare plant list those plants from the park flora that are not currently on one of the state lists but are likely to be listed soon. These plants have not been fully considered for listing because they have only recently been shown to occur in the respective state.

These possible "new state records" were noted by comparing our park flora with the state floras (Braun 1943, Harvill 1977 and 1981) and the unpublished county atlas of vascular plants in the University of Tennessee Herbarium. We have corresponded with the three state agencies to ask that these plants be considered for listing as rare plants in their respective state rare plant lists.

RESULTS

This study added 216 taxa to Hinkle's original checklist for the park and made 9 changes in its species composition. Among the 216 taxa, nine species are new to the states' respective plant listings (an exact number is difficult to determine, for Kentucky has no recent state flora checklist; two Kentucky floras are in preparation). *Cyperus brevifoliodes* is perhaps new for Kentucky but was not included in the CUGA rare plant list since it is probably a "weedy" new arrival.

Our rare plant list (Table 1) contains no federally-listed species or candidates for federal listing. (Six species found in the park were once candidates for federal listing.) There are 59 rare species on our rare plant list. Fifteen of these have not yet been shown to occur in the state in which they are listed, although they occur in other states in the park. In Table 1, these "wrong state" species are shown in parentheses. CUGA, at 8,204 hectares, has 44 rare species (not counting the "wrong" state species) while the Oak Ridge Reservation, at 14,980 hectares, has 13 state-listed species (Parr 1984). Several factors may be involved in this difference but we believe the most important is that CUGA lies on the boundaries of three states.

In CUGA, species may just "reach" a state and thus be rare in that state. We roughly estimate that 75% of the species on the list are peripheral. Of the 44 species on the reduced list, 28 occur in the Kentucky part of the park and are Kentucky-listed. Similarly, there are 14 Virginia species and 6 Tennessee species. The large number of Kentucky species can be understood by realizing that areas above 1,000 meters, such as the east end of the park, are rare in Kentucky. Thus, high elevation

species tend to be rare in Kentucky. The park is at the edge of the higher Appalachian mountains. Among the Kentucky-listed species, *Aster acuminata*, *Trillium undulatum*, *Glyceria melicaria*, *Maianthemum canadense*, *Melampyrum lineare*, and *Corydalis sempervirens* are peripheral species with ranges to the north and in the higher mountains. Another group of Kentucky peripherals includes southern Appalachian species: *Boykinia aconitifolia*, *Convallaria montana*, *Gentiana decora*, *Hexastylis heterophylla*, and *Listera smallii*. Finally, a few largely upland southern species are peripheral to Kentucky (*Philadelphus hirsutus*, *Salvia urticifolia*, *Helianthus atrorubens*, and *Castanea pumila*). The rest of the Kentucky species are categorized as local, having scattered populations (*Arenaria glabra*, *Adlumia fungosa*, *Lathyrus venosus*, *Silene ovata*, and *Paronychia argyrocoma*).

The largest group of Virginia species are peripheral from ranges mostly in the Cumberland Plateau of Kentucky and Tennessee (*Aster surculosus*, *Carex austro-caroliniana*, *Carex purpurifera*, *Rhododendron cumberlandense* and *Silene rotundifolia*). A few are found mostly to the west (*Liatris aspera*, *Silphium terebinthinaceum*, *Phlox amplifolia*, and *Blephilia hirsuta*). *Cheilanthes alabamesis*, *Magnolia macrophylla*, *Solidago flaccidifolia*, and *Philadelphus hirsutus* are found mostly to the south of Virginia.

The Tennessee species include *Calamagrostis porteri* and *Lilium canadense* with ranges generally to the north. Two other Tennessee species, *Silene ovata* and *Cardamine rotundifolia*, are local, and another two, *Hydrastis canadense* and *Panax quinquefolius*, are widespread but commercially threatened.

Three areas of particular interest for rare plants were found during the assessment. These are the "rich" moist woodlands of the Bannerfield Road area, the barrens above Cudjo Cave, and the high elevation area centered around White Rocks. These and other important areas are described in Appendix A.

TABLE 1

What follows is the rare plant list for CUGA generated by this study. The symbol "+" indicates that the plant was seen in this study in the indicated county. "New" means the plant may be listed once it has been considered fully. An asterisk (*) denotes first priority for protection in the park. The conditions for first priority are:

- a) state status E,T,S-1, or S-2
- b) small population in the park
- c) a species of rather low total population in its entire range

Two asterisks (**) denote second priority for protection in the park (i.e., meets conditions a and b above but not c).

Parentheses around a species indicate that it occurs in the park but has not yet been shown to occur in the state where it is listed or where it would be new.

The state list statuses are:

Virginia (based on number of known populations for the state but used flexibly and perhaps could best be interpreted as degree of endangerment):

- S-1 3 or fewer populations
- S-2 6-20 populations
- S-3 more than 20 populations
- S-4 apparently secure, special concern

(Virginia Natural Diversity Information Program, 1985).

Kentucky and Tennessee:

E endangered

T threatened

S special concern

(Kentucky Nature Preserves Commission, 1984; and Tennessee Heritage Program, 1983).

	Status	KY Bell	Harlan	Status	TN Claiborne	Status	VA Lee	Comments
1. <i>Adlumia fungosa*</i>	T	+		T			+	
2. (<i>Agrimonia gryposepala</i>)	S						+	To be expected in KY area
3. <i>Amianthium muscaetoxicum**</i>	T	+						
4. <i>Arenaria glabra*</i>	E		+					Called <i>Minuartia glabra</i> on KY list
5. <i>Aster acuminatus</i>	New		+					
6. <i>Aster surculosus</i>		+	+			S4	+	
7. <i>Blephilia hirsuta</i>						S4	+	
8. <i>Boykinia aconitifolia**</i>	T		+					
9. <i>Calamagrostis porteri</i>	E	+		New	+		+	
10. <i>Cardamine rotundifolia</i>		+		T	+		+	
11. <i>Carex austro-caroliniana</i>	New		+			New		Location very near VA where it would be new
12. (<i>Carex careyana</i>)					+	S3		
13. <i>Carex leptalea</i>	S	+						
14. <i>Carex purpurifera</i>						New	+	
15. <i>Castanea pumila</i>	E	+						
16. <i>Cheilanthes alabamensis</i>	E					S2SX	+	SX=not seen recently (until this study)

	Status	KY Bell	Harlan	Status	TN Claiborne	Status	VA Lee	Comments
17. <i>Convallaria montana</i>	E	+						
18. <i>Corydalis sempervirens**</i>	S	+						
19. (<i>Cypripedium parviflorum</i>)	E				+			To be expected in KY area of the park
20. (<i>Diarrhena americana</i>)		+					S4	Found less than 20 ft. from VA
21. (<i>Disporum maculatum</i>)					+		S2	
22. (<i>Euphorbia mercurialina</i>)	E				+			
23. <i>Gentiana decora</i>	T	+	+		+		+	
24. <i>Glyceria melicaria</i>	S	+	+					
25. <i>Helianthus atrorubens**</i>	E	+						
26. (<i>Heuchera parviflora</i>)		+					S4	Should be found in VA area of the park
27. <i>Hexastylis heterophylla</i>	S	+	+		+		+	
28. (<i>Hieracium scabrum</i>)		+		T				
29. <i>Hydrastis canadensis</i>				T	+		S3	
30. <i>Lathyrus venosus</i>	S	+	+				+	
31. <i>Liatris aspera**</i>		+					New	+
32. <i>Lilium canadense</i>				T	+		+	
33. <i>Listera smallii**</i>	T	+		T				
34. (<i>Lithospermum latifolium</i>)					+		S4	
35. (<i>Lycopodium porophilum</i>)		+					S1	
36. <i>Magnolia macrophylla</i>		+					S2	+
37. <i>Maianthemum canadense</i>	T		+					
38. <i>Melampyrum lineare</i>	E	+	+					

	Status	KY Bell	Harlan	Status	TN Claiborne	Status	VA Lee	Comments
39. <i>Panax quinquefolius</i>		+	+	T	+		+	
40. <i>Paronychia argyrocoma*</i>	E		+	E				
41. <i>Phildelphus hirsutus</i>	E	+				S4	+	
42. <i>Phlox amplifolia</i>						S4	+	
43. (<i>Polygonum arifolium</i>)				T			+	
44. (<i>Platanthera flava</i>)*				S			+	
45. <i>Rhododendron cumberlandense</i>		+	+			S4	+	
46. (<i>Ruellia purshiana</i>)							+	To be expected in TN (new)
47. <i>Salvia urticifolia</i>	E	+					+	
48. <i>Saxifraga michauxii</i>	E		+				+	
49. <i>Silene ovata</i>	T	+		T	+	S2	+	
50. <i>Silene rotundifolia</i>						S1	+	
51. <i>Silphium terebinthinacium**</i>	S					New	+	Our material is glabrous (upper surface)
52. <i>Solidago curtissii</i>	S	+						
53. <i>Solidago flaccidifolia</i>		+				New	+	
54. <i>Solidago roanensis</i>	T	+						
55. (<i>Spiranthes ovalis</i>)				S			+	
56. <i>Trillium undulatum</i>	T	+	+					
57. <i>Vaccinium erythrocarpum**</i>	New		+				+	
58. <i>Veratrum parviflorum</i>	T	+	+					
59. (<i>Woodsia scopulina</i>)	E			S			+	

DISCUSSION

CUGA is an important area for plant species preservation because:

- 1) a large number of state listed species occur here;
- 2) the park has enough area for most habitats to support populations large enough to have a good chance of survival; and
- 3) very little of the Cumberland Mountains is being preserved (much of the area has, in fact, been strip-mined).

Specific threats to particular plants are noted in Appendix C. We recommend monitoring *Amianthium muscaetoxicum*, *Arenaria glabra*, *Helianthus atrorubens*, *Liatris aspera*, and *Silphium terebinthinaceum*. These are priority species as noted in the Results. The remaining priority species are perhaps impractical for monitoring. Two species not recommended for monitoring are biennials and thus will probably have rapidly changing locations. The remaining priority species, that are not recommended for monitoring, are found in remote areas and, therefore, are less endangered and more difficult to monitor than the recommended species. (*Liatris aspera*, though recommended, may turn out to be too difficult to monitor due to remoteness.) (See Appendix C).

None of the plants known to occur in CUGA are significantly protected by endangered species laws. This is because: (1) no plants with federal status of any type are found in the park; thus, the Endangered Species Act does not apply; and (2) National Park Service protection of all natural features (including rare plants) is stronger than any state endangered species laws that might apply. Special protection of rare plants in CUGA then depends upon the willingness of CUGA management to consider the presence of state-listed species in CUGA in its management policies. It should be remembered that, though CUGA is designated a historical park, it

is also an important nature preserve. All plans for construction of new roads, campgrounds or historical restorations should include consideration of the impact on rare plants.

Although extensive surveys for rare plants were conducted during this study, we believe a few more rare plants could be discovered. Two areas, in particular, could use additional study. One of these is the south-facing slope of Cumberland Mountain east of Station Creek, where some areas of limestone outcrop may be found through the generally colluvium-covered slopes. The other is the lower end of the Martin's Creek drainage. This area is generally highly disturbed by logging and fires, but there may be some plants of interest that were not detected in this study.

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APPENDIX A

DESCRIPTION OF THE PARK

A description of the park and its important rare plant habitats is given here (see also Hinkle 1975, which gives particular information on plant communities). Plants on the park's rare plant list are denoted by an asterisk when mentioned in this appendix; more information on them can be found in the Results and Appendices C and D.

Cumberland Mountain (part of the Cumberland Mountains) is a ridge running about 150 kilometers southwest to northeast. (The ridge is called Stone Mountain rather than Cumberland Mountain at its eastern end.) About 25 kilometers of the ridge form the backbone of the park. (The park averages about 4 kilometers wide). The only major break in the ridge (in the park) is Cumberland Gap. The park is divided between states as follows:

<u>State</u>	<u>County</u>	<u>hectares</u>	<u>acres</u>
Kentucky	Bell, Harlan	4,325	10,682
Virginia	Lee	3,028	7,478
Tennessee	Claiborne	821	2,027

Generally, the southeast-facing slope (the scarp slope) is steeper with more cliffs (e.g., the White Rocks) than the northwest-facing slope (the dip slope). On the northwest facing slope there are fewer cliffs, and those that are present (e.g., Devil's Garden) are oriented so that the exposed rock faces up slope or is parallel to the slope. The ridge top is capped with sandstone or conglomerate. Limestone outcrops are found below on the southeast slope.

In the southwest end of the park, the ridge is divided into two parallel ridges, Powell Mountain (not to be confused with the Powell Mountain in the Ridge and Valley Province) and Cumberland Mountain. The valley between the ridges provides a moist area with soils partly derived from limestone. The upper end of the valley is drained by sinkholes and the lower by a stream. There is no similar area elsewhere in the park. Plants of interest here are *Disporum maculatum**, *Lilium canadense**, *Hydrastis canadensis**, and *Lithospermum latifolium**. The area is accessible by a park jeep road, Bannerfield Road, and lies entirely in Claiborne County.

Limestone cliffs are found on the southeast-facing slope of Powell and Cumberland Mountains. The strongest outcropping is near Cumberland Gap below the Pinnacle. The many steep slopes and cliffs in this area are sunny and dry. Oak and cedar trees are widely spaced, forming a "barrens" type of habitat. Plants of interest here include *Cheilanthes alabamensis**, *Lathyrus venosus**, *Salvia urticifolia**, *Ruellia purshiana**, *Eryngium yuccifolium*, *Liatris aspera**, and *Silphium terebinthinaceum**. The exit trail from Cudjo Cave provides some access, but in general the area is difficult to explore because of extreme steepness. The spread of kudzu up the slope could be a threat to this area. The botanical importance of this area should be taken into account in any plans for the Gap area after the completion of the tunnel. This area is in Lee County.

The well-known White Rocks area has the greatest elevations and highest cliffs in the park. The sunny sandstone ledges and cliff edges have three species on our park rare plant list. Heavy visitor use of the cliff edges could be damaging two of these species, *Paronychia argyrocoma**

and *Arenaria glabra**. The area where these species occur coincides with the area where visitors come to look at the view. There is no designated trail (as of 1985). Trampling may damage plants. The third species, *Silene rotundifolia**, is found on ledges below the top of the cliffs and is more widespread in the park than the other two. The cool slopes and cliffs of the dip slope behind the White Rocks have the following plants of interest: *Hexastylis heterophylla**, *Magnolia macrophylla**, *Aster acuminatus**, *Saxifraga michauxii**, *Trillium undulatum**, *Veratrum parviflorum**, and *Vaccinium erythrocarpum**.

Wet areas are few and encompass a small portion of the park but some have interesting plants. The area along Little Yellow Creek near the Resource Management Workshop has *Lemna*, *Gratiola virginiana* and *Woodwardia areolata*. These plants are much more common on the coastal plain than in the Cumberland Mountains. Another wet area of note is found at the base of Cumberland Mountain near Chadwell Gap Trail in Virginia. It is formed by springs feeding a basin that appears to be partially artificial. Here is found *Polygonum arifolium**, a plant apparently rare this far from the coast in the Appalachian region. So far, though, a considerable amount of time has been spent on high elevation wet areas; *Glyceria melicaria** is the only plant of note. The Bailey Meadows is an area of this type with potential for rare plants.

Other park areas of special interest include (1) dip slope ravines near the Pinnacle (*Convallaria montana**, *Amianthium muscaetoxicum**); (2) Devil's Garden (*Adlumia fungosa**, *Philadelphus hirsutus**, *Hexastylis heterophylla**); (3) the flat basin of Shillalah Creek between Brush Mountain and Cumberland Mountain (high elevation stream with nearby

wetlands); and (4) Lewis Hollow near Skylight Cave (*Carex purpurifera**,
*Phlox amplifolia**). This list of areas, however, does not cover all areas
where rare plants are found (see appendices C and D) and further study may
discover additional areas of special interest.

APPENDIX B

Checklist of the Vascular Plants of Cumberland Gap National Historical Park.

The list is divided into Pteridophyta, Gymnospermae, Monocotyledoneae and Dicotyledoneae. In each of these sections, taxa are arranged alphabetically by family and then species. The nomenclature is largely Radford (1968). The list is a combination of Hinkle's list with revisions and additions to Hinkle's list from the present work. Hinkle's entries are identified by the voucher specimen codes which follow the authorities (see below). For non-Hinkle entries, parentheses around a county indicate sight reports only for that county. Species that are believed to have entered the park due to European culture are designated as aliens. Those designated as "alien?" may well be alien, but the situation is not as clear or the species may be native in some areas of the park and alien in other areas. Vouchers are housed at the University of Tennessee herbarium with the exception of some Hinkle specimens in the park herbarium.

Specimen Codes

5 digits = Hinkle
CG + number = Pounds
TP + number = Patrick

State Index for Counties in the Park

Kentucky - Bell, Harlan
Tennessee - Claiborne
Virginia - Lee

PTERIDOPHYTA

ASPIDIACEAE

Athyrium asplenoides (Michaux) A. A. Eaton. 49756, 49840, 49892.
Oak forests and cove areas. Sugar Run Lewis Hollow. Bell, Lee.

Athyrium pycnocarpon (Sprengel) Tidestrom. CG84-22. Uncommon
in rich moist woodlands. Claiborne, (Lee).

Athyrium thelypteroides (Michaux) Desvaux. CG84-23. Widely
scattered in rich moist woodlands. Lee, Bell, (Claiborne).

Cystopteris bulbifera (L.) Bernh. 49302. Shaded limestone ledge.
Lewis Hollow near Skylight Cave. Lee.

Cystopteris protrusa (Weatherby) Blasdell. CG84-105. Uncommon
limestone woodlands. Lee.

Dryopteris goldiana (Hooker) Gray. CG85-103. Valley between Powell Mountain and Cumberland Mountain. Moist, rich soil. Claiborne.

Dryopteris intermedia (Willd.) Gray. 49883. North facing slope; streamside Shillalah Creek. Bell.

Dryopteris marginalis (L.) Gray. 49852. North facing coves; mixed hardwoods. Sugar Run and Laurel Branch drainages. Bell.

Onoclea sensibilis L. CG85-108. Sink between Powell and Cumberland Mountains. Claiborne.

Polystichum acrostichoides (Michaux) Schott. 47230, 47796. Shaded trailside and mixed hardwood slopes. Sugar Run. Bell.

Thelypteris hexagonoptera (Michaux) Weatherby. 49848. Oak-hickory forests. Head of Laurel Branch drainage. Bell.

Thelypteris noveboracensis (L.) Nieuwland. 47795, 47845, 49566. Oak woods on north facing slopes; Sugar Run. Streamside; Gibson Gap. Bell, Lee.

Woodsia obtusa (Sprengel) Torrey. CG85-110. Uncommon on limestone ledges. Claiborne (Lee).

Woodsia scopulina D.C. Eaton. CG85-54. Seen only on thin bedded, shaded, sandstone below the Pinnacle. Lee.

ASPLENIACEAE

Asplenium montanum Willd. 49482. Shaded crevice in sandstone boulder. Tri-state trail. Bell.

Asplenium pinnatifidum Nuttall. CG85-187. One plant just off the Ridge Trail east of the second overlook. Sandstone face. Lee.

Asplenium platyneuron (L.) Oakes. 47154, 49355, 49440, 49518. Trailside; Sugar run, Lewis Hollow and Ridge. Bell, Lee.

Asplenium resiliens Kunze. CG84-95. Scattered on limestone ledges. Lee.

Asplenium rhizophyllum L. 47210. Boulder field. Devil's Gardens. Bell.

Asplenium ruta-muraria L. CG84-78. Uncommon on limestone ledges. Lee.

Asplenium trichomanes L. CG85-183. Seen only three times. Moist sandstone faces. Bell.

BLECHNACEAE

Woodwardia areolata (L.) Moore (=Lorinseria areolat Presl.)
CG 85-9. Wet area just east of the I. and R.M. workshop. Bell.

EQUISETACEAE

Equisetum hyemale L. CG85-211. Disturbed wet area near U.S. Hwy. 58.
Lee.

LYCOPODIACEAE

Lycopodium flabelliforma (Fernald). Blanchard. 49376. Woods. Bell.

Lycopodium lucidulum Michaux. CG85-48. Cool ravines. Harlan, (Bell.)

Lycopodium obscurum L. var. *obscurum* CG84-67. Sand Cave area with
heaths. Harlan.

Lycopodium porophilum Lloyd and Underwood. CG84-47 sandstone ledge,
Sand Cave Branch. Harlan.

Lycopodium tristachyum Pursh. CG84-81. Ridge top woods near Hensley.
Bell.

OPHIOGLOSSACEAE

Botrychium dissectum Sprengel. CG84-87. Woodlands,
scattered. Claiborne (Bell).

Bothyrium virginianum (L.) Swartz. 47249, 49452. Woods. Bell, Lee.

Ophioglossum vulgatum var. *pycnostichum* Fernald. CG85-115.
Two sites in wet woods. Lee.

OSMUNDACEAE

Osmunda cinnamomea L. 47797. Woods. Bell.

Osmunda regalis var. *spectabilis* (Willd.) Gray. 49755. Wet areas. Bell.

Osmunda claytoniana L. CG85-197. A few sites in moist upland woods.
Bell.

POLYPODIACEAE

Polypodium virginianum L. 47211, 49311, 49746. Sandstone boulder;
Devil's Garden, chestnut oak forest; Wilderness Road Campground.
Bell, Lee.

Polypodium polypodioides (L.) Watt. 49451. Sandstone boulder;
Gibson Gap Trail. Lee.

PTERIDACEAE

Adiantum pedatum L. 47799. Woods. Bell.

Cheilanthes alabamensis (Buckley) Kunze. CG84-108. Limestone ledges. Uncommon. Lee.

Cheilanthes lanosa (Michaux) D.C. Eaton. CG84-97. Common on limestone ledges. Lee, (Claiborne).

Dennstaedtia punctilobula (Michaux) Moore. 49871. Oak woods near junction of Lewis Hollow and Ridge trails. Lee.

Pellaea atropurpurea (L.) Link. CG84-77. Limestone ledges. Lee. (Claiborne).

Pteridium aquilinum (L.) Kuhn. 49839. Open oak forest; southeast-facing slope. Gibson Gap trail. Lee.

SCHIZAEACEAE

Lygodium palmatum (Bernh.) Swartz. 48169. Woods. Bell.

GYMNOSPERMAE

GINKGOACEAE

Ginkgo biloba 49581. Old homesite. Lewis Hollow. Lee.

PINACEAE

Pinus rigida Miller. 49468. Dry ridges. Throughout. Lee.

Pinus virginiana Miller. 49467, 47776. Dry ridges and slopes. Bell, Lee.

Tsuga canadensis (L.) Carr. 47771. coves and lower north facing slopes. Bell.

CUPRESSACEAE

Juniperus virginiana L. 49703. Old fields and disturbed areas; on basic soils. Lee.

MONOCOTYLEDONEAE

ALISMATACEAE

Alisma subcordatum Raf. CG85-185. Wet area along Little Yellow Creek. Bell.

Sagittaria latifolia Willd. var. *pubescens* (Muhl.) J. G. Smith.
49425. Wet ditch. Wilderness Road Campground. Lee.

AMARYLLIDACEAE

Hypoxis hirsuta (L.) Coville. 47224,47839. Shady trailsides.
Sugar Run, Gibson Gap. Bell, Lee.

ARACEAE

Acorus calamus L. CG85-212. Wet areas. Lee. alien?

Arisaema dracontium (L.) Schott. CG85-223. Bottoms along Little
Yellow Creek. Bell.

Arisaema triphyllum (L.) Schott. 47752. Boulder Garden. Sugar Run.
Bell, (Caliborne).

COMMELINACEAE

Commelina communis L. 48158,49728. Shady edge of hardwood forest
and roadsides. Misha Mokwa Trail and Hwy. 998. Bell, Lee. alien?

Tradescantia ohiensis Raf. 49413. Opening along Ridge trail. Lee.

Tradescantia virginiana L. 47834,49301. Oak-hickory forest edge.
Ridge trail. Lee.

CYPERACEAE

Carex artitecta Mackenzie. 49944. Mixed oak forest. Lewis Hollow
Trail. Lee.

Carex austrocaroliniana Bailey. CG85-31. Seen once in ridge top
forest southwest of the White Rocks. (near the state line thus
the specimen may actually be from VA.) Harlan.

Carex baileyi Britton CG85-98. Wet area. Claiborne.

Carex blanda Dewey. TP5536. Mesic woods along Bannerfield Road.
Claiborne.

Carex careyana Torrey. CG85-39. Limestone woods along the Bannerfield
Road. Claiborne.

Carex cephalophora Muhl. ex Schkuhr. CG84-60. Along Sugar Run. Bell.

Carex crinita Lam. var. *gynandra* (Schweinitz) Schweinitz et Torrey.
47758,CG85-130. Streamside. Sugar Run. Bell.

Carex debilis Michaux var. *pubera* Gray. CG84-45,CG85-63,CG85-137.
Wet woods. Bell, Harlan.

Carex debilis Michaux var. *rudgei* Bailey. CG85-69. Low wet woods. Bell.

Carex digitalis Willd. 49942, CG85-48. Mixed oak forest, northwest-facing slope. Sand Cave Trail. Bell.

Carex rankii Knuth. 49270, 49357, TP5755. Old field edge, lower south-facing slopes-trailside. Wilderness Road Campground, Gibson Gap. Bell, Lee.

Carex gracillima Schweinitz. CG85-43. Along Bannerfield Road. Claiborne.

Carex intumescens Rudge. CG85-59. Along lower end of Station Creek. Lee.

Carex jamesii Schweinitz. CG85-41, TP5537. Along Bannerfield Road, mesic woods. Claiborne.

Carex laevivaginata (Kukenthal) Mackenzie. CG85-91. Wet areas. Bell.

Carex laxiflora Lam. 49383, 49942, 49946. Roadside. Davis Branch. Mixed oak forest. Gibson Gap. Bell, Lee.

Carex leptalea Wahl. CG85-89. Wet area along the Ridge Trail. Bell.

Carex lurida Wahlenberg. 49720, CG85-168. Mixed woods, Gibson Gap Trail. Lee.

Carex muhlenbergii Schkur. var. *enervis* Boott. 49906, 49945. CG85-80. Streamside, mesic trailside. Lewis Hollow, Davis Branch. Bell, Lee.

Carex normalis Mackenzie. CG84-27 CG85-88. 49351. Streamside. Lewis Hollow Trail. Lee.

Carex pensylvanica Lam. var. *distans* Peck. CG85-51, CG85-38. Woods. Lee, Claiborne.

Carex pensylvanica Lam. var. *pensylvanica* 49481. Tri-state trail. Bell.

Carex platyphylla Carey. 49943. Mesic cove. Lewis Hollow Trail. Lee.

Carex prasina Wahl. CG85-97. Wooded wet area. Claiborne.

Carex purpurifera Mackenzie CG85-40. TP5552. Rich, limestone woods. Bannerfield Road, Lewis Hollow. Claiborne, Lee.

Carex radiata (Wahl.) Dewey. CG85-57, CG85-150, TP5332 Limestone woods. Lee, Claiborne.

Carex retroflexa Muhl. ex Schkuhr. 49950. Mesic woods. Gibson Gap. Lee.

Carex rosea Schkuhr. 49257,49265. CG85-67. Rich woods, trailsides. Davis Branch. Bell.

Carex scabrata Schweinitz. CG85-196. Wet area along Ewing Trail. Lee.

Carex striatula Michaux. CG85-42. Woods. Claiborne.

Carex styloflexa Backley CG85-70. Along Little Yellow Creek. Bell.

Carex swanii (Fernald) Mackenzie. CG85-79, CG85-132, 49268. Trail sides. Bell.

Carex torta Boott. 49263. Stream bed. Sugar Run. Bell.

Carex tribuloides Wahl. CG85-76. Along Martin's Branch. Harlan.

Carex virescens Muhl. ex Schkuhr. 49907. CG84-20, CG84-56. South slopes, oak woods. Sugar Run, Gibson Gap. CG84-90. Bell, Lee.

Carex vulpinoidea Michaux. 49346,49370. Wet ditches, streamside. Wilderness Road Campground. Lee.

Cyperus brevifolioides Thieret et Delahoussaye. CG84-123. Wet roadside. Bell. alien. (Perhaps new for Kentucky)

Cyperus dipsaciformis Fern. TP5734. Along the Ridge Trail about .2 mi east of the Pinnacle. Bell.

Cyperus strigosus L. 49597,49637. Low wet areas. Hensley Settlement, Davis Branch Road. Bell.

Eleocharis tenuis (Willd.) Schultes. CG85-131, CG84-59. One wet meadow near Hensley. Bell.

Rhynchospora capitellata (Michaux) Vahl. 49653. Marshy area. Davis Branch Road. Bell.

Scirpus cyperinus (L.) Kunth. 48183,49758. Marshy areas. Davis Branch, Martins Fork, Sugar Run. Bell.

Scirpus polyphyllus Vahl. 49606,49759. Low wet roadside. Davis Branch. Bell.

DIOSCOREACEAE

Dioscorea batatas Dcne. 49292,49629. Shady roadside. Davis Branch. Bell. alien.

Dioscorea villosa L. 47777,49861. Mixed oak, northeast- and southeast-facing slopes (limestone). Sugar Run, Ridge. Bell, Lee.

IRIDACEAE

Belamcanda chinensis (L.) DC. TP5735. Limestone barren above Cudjo Cave. Lee. alien?

Iris cristata Aiton. 47209. Streambank. Devil's Garden. Bell.

Sisyrinchium angustifolium Miller. 47837. Grassy, mesic trailsides. Gibson Gap. Lee.

JUNCACEAE

Juncus debilis Gray. CG85-224,49590. Wet areas. Bell.

Juncus effusus L. 49272,49303. Wet ditches, streamside. Davis Branch, Gibson Gap. Bell, Lee.

Juncus subcaudatus Gray. 48170. Stream edge. Hensley Settlement. Bell.

Juncus tenuis Willd. 49269,49348,49382,49556,CG85-116. Mesic roadsides, old field edges. Davis Branch, Wilderness Road Campground. Bell, Lee.

Luzula acuminata Raf. var. *carolinae* (Watson) Fernald. 49262,49483. Shaded crevice sandstone ledge, streamside. Tri-state, Sugar Run. Bell.

Luzula bulbosa (Wood) Rybd. 49251,49484,49847,TP5539,49258. South-facing slope oak-pine. Sugar Run. Bell.

Luzula echinata (Small) Hermann. 47189,TP5571,49256,49491. Widespread in mesic woods and low wet areas. Bell, Lee.

LEMNACEAE

Lemna aff. *minor* L. CG85-90. Small pond near I. and R.M. Workshop. Bell.

LILIACEAE

Allium cernuum Roth ex Roemer. 49529,49530. Dry roadside. Iron Furnace. Claiborne.

Allium tricoccum Aiton. CG85-145. One north facing ravine off the Ridge Trail. Bell.

Amianthium muscaetoxicum (Walter) Gray. 49310. Mixed hardwood, north-facing draw. Ridge. bell.

Chamaelirium luteum (L.) Gray. 47830. Oak forest, southeast-facing slope. Gibson Gap. Lee.

Clintonia umbellulata (Michaux) Morong. 47207, 47242. Mesic woods. Devil's Gardens. Bell.

Convallaria montana Raf. CG84-63, 6.5. Several colonies on the top or north-facing slope of Cumberland Mountain; near and on both sides of the Cumberland Gap. Bell.

Disporum lanuginosum (Michaux) Nicholson. 49597. North-facing draw. Martins Fork. Bell.

Disporum maculatum (Buckley) Britton. CG85-23. Along a stream in the Bannerfield Road area. Claiborne.

Erythronium americanum Ker. CG85-8. Moist woods near Skylight Cave. Lee.

Lilium canadense L. 48189. Mixed hardwood, southeast-facing draw. Ewing. Lee, (Claiborne).

Maianthemum canadense Desf. Cranfill 2783. Woods in the White Rocks area. Harlan. (see Cranfill 1981).

Medeola virginiana L. 47250, 49914. Shaded trailside, hemlock stand. Sugar Run. Bell.

Polygonatum biflorum (Walter) Ell. 47215. Mixed oak. Chadwell Gap. Lee.

Smilacina racemosa (L.) Desf. 47225, 47824, 49511. Shaded trailsides. Sugar Run, Gibson Gap. Bell, Lee.

Smilax bona-nox L. 49469. Disturbed woods. Gibson Gap. Lee.

Smilax glauca Walter. 47775, 49477. Secondary woods. Wilderness Road Campgrounds. Lee.

Smilax herbacea L. TP5325, 47833. North-facing mesic draw. Ridge. Bell, Lee.

Smilax hispida Muhl. 49460, 49877, 47802. Mesic draw woods. Gibson Gap. Lee.

Smilax hugeri (Small) Norton. TP5273. Bouldery, mesic forest. Claiborne.

Smilax pulverulenta Michaux. TP5534. Bannerfield Road sinks area, mesic forest. Claiborne.

Smilax rotundifolia L. 49916, 49836. Open hardwood forests. Gibson Gap. Lee.

Trillium erectum L. 47201, 49917, CG85-11. Shaded roadbank, streamside. Martins Fork, Devil's Gardens. Bell. (forma *viridiflorum* (Hooker) Peattie, TP5549).

Trillium grandiflorum (Michaux) Salisbury. CG85-83. Wooded slope near Ridge Trail. Bell.

Trillium sulcatum Patrick. CG85-21, TP 5340. Rich woods; Bannerfield Road area. Lee. (Recently named).

Trillium undulatum Willd. CG84-8, 48185. Woods at higher elevations. Bell, (Harlan).

Uvularia grandiflora Smith. 47208. Mesic cove. Devil's Gardens. Bell.

Uvularia perfoliata L. 47195, 47240. Northeast-facing mesic woods, trailside edge of second growth hardwoods Devil's Gardens, Davis Branch, Bell.

Uvularia sessilifolia L. CG85-31.5. Ridge Trail near Buther Gap. Bell.

Veratrum parviflorum Michaux. See Cranfill 1981. High elevation north-facing wooded slopes of Cumberland Mountain. Bell, (Harlan).

Yucca filamentosa L. Sighted at old homesite. Ewing Trail. Lee. alien?

ORCHIDACEAE

Aplectrum hyemale (Muhl. ex. Willd.) Torrey. TP5274. Woods. Claiborne.

Corallorhiza odontorhiza (Willd.) Nuttall. 49824, 49825. Open trailside. Mixed oak-pine. Sugar Run, Chadwell Gap. Bell, Lee.

Corallorhiza wisteriana Conrad. CG86-1. Limestone woods. Lee, (Claiborne).

Cypripedium acaule Aiton. 47756. Pine-oak forest. Sugar Run. Bell.

Cypripedium calceolus L. var. *parviflorum* (Salisbury) Fern. TP5532. Bannerfield Road area. Claiborne.

Cypripedium calceolus L. var. *pubescens* (Willd.) Correll. 49851. Oak-hickory. West-facing slope. Laurel Branch. Bell.

Goodyera pubescens (Willd.) R. Brown. 47171, 48152, 49503. Edge of mixed oak and hemlock. Sugar Run, Misha Mokwa. Bell, Lee, (Claiborne).

Hexalectris spicata (Walter) Barnhart. CG85-156. Limestone woods. Lee.

Isotria verticillata (Muhl. ex. Willd.) Raf. CG85-124. Colonies scattered in non-calcareous areas.

Liparis lilifolia (L.) Richard. 49377. Mixed oak. North-facing slope. Ridge. Bell.

Listeria smallii Wiegand. 49882. In *Rhododendron* thicket with mixed hardwoods. Shillalah Creek. Bell.

Malaxis unifolia Michaux. 49885. Mixed oak. Upper south-facing slope. Shillalah Creek. Bell.

Orchis spectabilis L. 47192. Mesic forest. Devil's Gardens. Bell.

Plantanthera ciliaris (L.) Lindley. 48171. Shady roadside. Martins Fork. Bell.

Plantanthera clavellata (Michaux) Sprengel. CG85-169. Wet, wooded areas. Bell, (Lee).

Plantanthera flava (L.) Lindley var. *herbiola* (R. Brown) Luer. CG85-214. Dry woods; north of US 58 near Station Creek. (Very strange habitat for this plant). See Appendix C.

Plantanthera lacera (Michaux) Lodd. photo record. One plant in a dry pine woods (unusual habitat). Lee.

Spiranthes cernua (L.) Richard. 49822, TP5335. Chadwell Gap Trail. Wet land. Lee.

Spiranthes gracilis (Bigelow) Beck. 49616. Grassy, old field. Wilderness Road Campground. Lee.

Spiranthes ovalis Lindl. 49821, 49823. Edge of pine-hardwood utility road. Wilderness Road Campground. Lee.

Spiranthes vernalis Engelm. et Gray. 49560. Edge of farm field-pine stand. Hensley Settlement, Wilderness Road. Bell, Lee.

POACEAE

Agrostis hyemalis (Walter) BSP. TP5276, 49940. Open mixed oak forest, south-facing slope. Shillalah Creek. Bell.

Agrostis perennans (Walter) Tuckerman. 49599, 49763. Old field mixed hardwood forest edges. Hensley Settlement. Bell.

Agrostis stolonifera L. 49293. Roadside, Hwy. 998. Bell. alien?

Andropogon virginicus L. 49264, 49725, 49791. Roadside and old fields. Bell, Lee.

Arundinaria gigantea (Walter) Muhl. 47815. Dry roadsides and streamsides. Wilderness Road Campground. Lee.

Bromus japonicus Thunberg. 49267,49844. Old field edge. Wilderness Road Campground. Lee. alien.

Bromus pubescens Muhl. (*Bromus purgans* L.) 49271,49859. Mixed oak forests over limestone. Lee.

Brachyelytrum erectum (Schreber) Beauvois. 49938,CG85-184. Oak-hickory forest, southeast-facing slope. Gibson Gap. Lee, Bell.

Calamagrostis porteri Gray. TP5300,CG84-37,CG84-117. Wooded slopes. Claiborne, Lee.

Cinna arundinacea L. 49650,49902. Low wet roadsides. Davis Branch. Bell.

Cinna latifolia (Trev.) Grisebach. 49779. Low wet roadsides. Davis Branch. Bell.

Dactylis glomerata L. 49266. Open dry trailsides. Lee. alien.

Danthonia sericea Nuttall var. *sericea* Nuttall. 49620,49420. Oak woods. Sugar Run. Bell.

Danthonia spicata (L.) Beauvois ex R. and S. 49939, TP5749. Oak forest, south-facing slope. Gibson Gap. Lee.

Diarrhena americana Beauv. Voucher missing. Near the Ridge Trail on a rock outcrop within a few feet of VA. Bell.

Dicanthelium acuminatum (Swartz) Gould et Clark var. *acuminatum* 49561,49901. Old field. Hensley Settlement. Bell.

Dicanthelium boscii (Poiret) Gould et Clark. 49402,49941. Mixed oak forest. Picnic area. Lee.

Dicanthelium commutatum (Schultes) Gould. Open mixed oak forests. Gibson Gap. Lee.

Dicanthelium sphaerocarpam (Ell.) Gould var. *isophyllum*. (Scribner) Gould et Clark. 48167,49287,49385,49450,49628. Old field edges and roadsides. Bell, Lee.

Dicanthelium sphaerocarpon (Ell.) Gould var. *sphaerocarpon* 49396. Roadside. Union College Environmental Education Center. Bell, A,E.

Digitaria ischaeman (Schreber) Schreber ex Muhl. 49776. Roadsides. Bell.

Elymus canadensis L. CG85-156.5,CG85-220. Limestone ledges. Lee.

Elymus villosus Muhl. 49363. Old field edge. Lewis Hollow. Lee.

Elymus virginicus L. var. *glabriflorus* (Vasey) Bush. 49764. Wet ditch near Park workshop. Bell.

Eragrostis spectabilis (Pursh) Steudel. 49577. Open farm field. Sandy soil. Hensley Settlement. Bell.

Erianthus alopecuroides (L.) Ell. 49709,49730. Roadside, Hwy. 998 and Wilderness Road Campground. Bell, Lee.

Festuca obtusa Biehler. 49935,49936. Trailside. Lewis Hollow. Lee.

Glyceria melicaria (Mich.) Hubbard. 49594,TP5324. Wet areas at higher elevations. Bell, Harlan.

Glyceria striata (Lam.) Hitchcock. 49275. Wet ditches. Davis Branch. Bell.

Hystrix patula Moench. 49327. CG85-151,CG84-91,64. Old field-forest edge. Lewis Hollow. Lee.

Leersia virginica Willd. TP5292A,49780. Marshy woods. Yellow Creek. Bell.

Lolium perenne L. CG84-40-38. Along the Ridge Trail. Bell, (Lee). alien.

Microstegium vimineum (Trinius) A. Camus. 49904. Wet roadside. Hensley Settlement. Bell. alien.

Muhlenbergia schreberi J.F. Gmelin. 49903. Old field edge. Lewis Hollow. Lee.

Muhlenbergia sobolifera (Muhl.) Trin. TP5741. Limestone ledge above Cudjo Cave. Lee.

Muhlenbergia tenuiflora (Willd.) BSP. TP5272,49937. Roadside. Ewing Trail. Lee.

Panicum anceps Michaux. 48206,49651. Dry roadsides, Hwy. 998. Bell.

Panicum dichotomiflorum Michaux. 49777. Roadsides. Bell.

Panicum dichotomum L. 49648. Wet roadside. Davis Branch. Bell.

Panicum gattingeri Nash. 49735. Roadside, Hwy. 998. Bell.

Panicum latifolium L. 49315,49340. Oak-hickory forests. Sugar Run. Roadside, Hwy. 58. Bell, Lee.

Paspalum pubiflorum Rupr. 49794. Edge of old field, Wilderness Road Campground. Lee.

Phleum pratense L. 49352,49565. Roadside, Hwy. 998. Bell. alien.

Poa cuspidata Nuttall. 49254,49480,49485,49489. Open mixed oak forests; old fields. Lee.

Poa pratensis L. 49261,49291,TP5749,CG85-162. Dry oak forests and roadsides. Sugar Run, Hwy. 998. Bell. alien?

Schizachyrium scoparium (Michaux) Nash. CG84-87.5. Dry area along Pine Branch Trail. Bell.

Setaria geniculata (Lam.) Beauvois. 49403,49615. Roadsides and old fields. Bell, Lee.

Setaria glauca (L.) Beauvois. 49768. Roadsides. Bell. alien.

Setaria viridis (L.) (Muhl.) Trin. TP5741. Limestone ledges above Cudjo Cave. Lee. alien.

Sorghastrum nutans (L.) Nash. TP5282,49717,49734. Roadsides; Pinnacle and Hwy. 998. Bell, Lee.

Sphenopholis nitida (Biehler) Scribner. 49255. Beech woods. Davis Branch. Bell.

Tridens flavus (L.) Hitchcock. 49669,49778. Roadside. Bell, Lee.

SPARGANIACEAE

Sparganium aff. *americanum* Nuttall. CG85-166. Davis Creek at U.S. 25. Bell.

TYPHACEAE

Typha latifolia L. 49695. Spring seepage area. Chadwell Gap Trail. Lee.

DICOTYLEDONEAE

ACANTHACEAE

Ruellia caroliniensis (Walter) Steudel. CG85-180. Openings on limestone ledges. Lee.

Ruellia purshiana Fernald. CG85-113. One site on the barrens above Cudjo Cave. Lee.

ACERACEAE

Acer negundo L. 47787 Mesic roadside, Hwy. 998. Bell.

Acer pensylvanicum L. Cranfill and Medley (1981) give White Rocks as the location. Not seen in the present study. Harlan.

Acer rubrum L. 47233, 47764, 49462. Common understory of mixed oak, pine-oak. Throughout. Bell, Lee.

Acer saccharum Marshall. 49747. Mesic woods, north-facing slope. Devil's Gardens. Bell.

AIZOACEAE

Mollugo verticillata L. 49771. Roadside. Davis Branch. Bell. alien?

ANACARDIACEAE

Rhus aromatica Aiton. 49864. Basic soil, southeast-facing slope below Powell Valley overlook. Lee.

Rhus copallina L. 49343, 49547. Old field edges. Wilderness Road Campground. Lee.

Rhus glabra L. 49354, 49549. Old field thickets. Lewis Hollow, Wilderness Road Campground. Lee.

Rhus radicans L. Common in disturbed woods, especially on boulder fields. Sight record (Hinkle). Bell, Lee.

ANNONACEAE

Asimina triloba (L.) Dunal. 49390, 49494. Southeast-facing draw, mesic roadside. Lewis Hollow, Union College EEC. Bell, Lee.

APIACEAE

Angelica venenosa (Greenway) Fernald. 49373, 49502, 49510. Open waste areas, road and trailsides. Sugar Run, Wilderness Road Campground. Bell, Lee.

Chaerophyllum tainturieri Hooker. 47757. Grassy trailside. Davis Branch. Bell. alien.

- *Cryptotaenia canadensis* (L.) DC. 49297, 49309, 49336, 49765. Wet roadsides, streamsides. Davis Branch, Lewis Hollow, Yellow Creek. Bell, Lee.

Daucus carota L. 49318, 49635. Roadsides, old fields. Throughout. Bell, Lee. alien.

Eryngium yuccifolium Michaux. Photo by Pounds confirming sight report by Hinkle. Rare on the barrens above Cudjo Cave. Lee.

Ligusticum canadense (L.) Britton. CG85-109. Sink near Bannerfield Road. Claiborne.

Osmorhiza claytonii (Michaux) Clarke. CG85-20. Bannerfield Road; woods. Claiborne.

Osmorhiza longistylis (Torrey) CG85-84. Along Ridge Trail. Bell, Claiborne.

Oxypolis rigidor (L.) Raf. 49646,49671,49766. Wet roadsides, marshy areas. Davis Branch, Yellow Creek. Bell.

Sanicula canadensis L. 49362. Abandoned homesite. Lewis Hollow. Lee.

Sanicula gregaria Bicknell. 49879. Mixed oak, upper southeast-facing draw. Gibson Gap. Lee.

Sanicula smallii Bicknell. 47849. Mesic hardwood/streamside. Gibson Gap. Lee.

Taenidia integerrima (L.) Drude. 48210. Open forest edge. Ewing. Lee.

Thaspium barbinode (Michaux) Nuttall. 49333,49453,49544. Trail, stream and old field edges. Lewis Hollow, Gibson Gap. Lee.

Thaspium trifoliatum L. var. *flavum* Blake. CG85-100. East Portal; woods edge. Claiborne.

Torilis arvensis (Hudson) Link. 49398,49400,49527. Dry roadsides. Hwy. 58, Iron Furnace. Claiborne, Lee. alien.

Zizia aptera (Gray) Fernald. 47755. Open mesic roadside. Davis Branch. Bell.

APOCYNACEAE

Apocynum cannabinum L. 49328,49492. Roadsides. Hwy. 58, Union College Environmental Education Center. Bell, Lee.

AQUIFOLIACEAE

Ilex ambigua (Michaux) Torrey. var. *montana* (T. and G.) Ahles. 49588,49589,49928. Edge of old field thickets. Hensley Settlement. Bell.

Ilex opaca Aiton. 47762. Shaded trailside, pine-hardwood. Sugar Run. Bell.

ARALIACEAE

Aralia nudicaulis L. 49853. Mixed oak, northeast-facing draw. Laurel Branch drainage. Bell.

Aralia racemosa L. 48166,49826. Open mixed oak, east-facing slopes; roadsides. Chadwell Gap, Martins Fork access. Bell, Lee.

Aralia spinosa L. 48165. Roadside. Martins Fork access. Bell.

Panax quinquefolius L. Rare, not collected. Mixed oak draw. Laurel Branch drainage. Bell.

ARISTOLOCHIACEAE

Aristolochia macrophylla Lam. 47784. Twining on Betula lenta. Sugar Run. Bell.

Aristolochia serpentaria L. 49866. Southeast facing draw, oak-hickory. Basic soil. Gibson Gap. Lee.

Asarum canadense L. 47206,49745. Colluvium near stream. Devil's Gardens. Bell.

Hexastylis arifolia (Michaux) Small. 47780. Mesic woods near spring. Sugar Run. Bell.

Hexastylis heterophylla (Ashe) Small. 47178,47204, CG85-35. Widely scattered in woods. Bell, Lee, (Claiborne). (*H. virginica* in Hinkle 1975).

ASCLEPIDACEAE

Asclepias exaltata L. CG85-104. Bannerfield Road and Ewing Trail; woods. Lee, (Claiborne).

Asclepias incarnata L. 49578. Open seepage area near spring. Hensley Settlement. Bell.

Asclepias quadrifolia Jacq. 47829,49316. Mixed oak, oak-hickory, north and south facing slopes. Sugar Run, Gibson Gap. Bell, Lee.

Asclepias syriaca L. 48161,49366,49537. Roadsides, old fields. Hwy. 58, Iron Furnace. Claiborne, Lee. alien.

Asclepias tuberosa L. 48190,49550. Roadsides, old fields. Hwy 58, Ewing. Lee.

Asclepias variegata L. CG85-99. Along a jeep trail near the East Portal. Claiborne.

Asclepias verticillata L. CG85-141. Prairie patch above Cudjo Cave. Lee.

Asclepias viridiflora Raf. CG85-153. Prairie patch above Cudjo cave. Lee.

ASTERACEAE

Achillea millefolium L. 47813,48191. Shady trail-sides. Ewing Wilderness Road Campground. Lee. alien.

Ambrosia artemisiifolia L. 49567,49643. Roadsides, waste places. Very common. Bell, Lee.

Antennaria plantaginifolia (L.) Richardson. 47177. Forest litter, trailside. Sugar Run. Bell.

Antennaria solitaria Rydberg. 47175,47216. Shady trailsides. Tri-state, Chadwell Gap. Bell, Lee.

Aster acuminatus Michx. CG84-99. Cool north facing slopes of Cumberland Mountain. Harlan.

Aster concinnus Willd. (=A. laevis var. concinnus) TP 5731. Along the Ridge Trail 0.1 mile east of the Pinnacle. Bell.

Aster cordifolius L. 49793,49802,49819. Trailsides, roadsides, open oak forests. Very common. Bell, Lee.

Aster divaricatus L. 49586. Roadside/old field thicket. Hensley Settlement. Bell.

Aster dumosus L. 49645,49740,49792,49814. Roadsides, old fields, waste places. Hensley Settlement, Ewing. Bell, Lee.

Aster infirmus Michaux. 48217,49684,49700, TP5737. Trailside, mixed oak southeast facing slope. Ewing. Lee.

Aster lateriflorus (L.) Britton. 49933. Low woods, Davis Branch. Bell.

Aster linariifolius L. 49720. Dry open woods, sandy soil, north facing slope. Ridge trail near Pinnacle. Bell.

Aster lowrieanus Porter. CG84-84, 49688. Woods; Brush Mountain. Bell.

Aster patens Aiton. 49679,49741,49785,49888. Roadsides, trailsides. Common. Bell, Lee.

Aster oblongifolius Nutt. CG85-205. Barrens above Cudjos Cave. Lee.
Aster paternus Cronquist 48192,48218,49447,49501,49513,49573. Mixed oak, southeast-facing slopes, trailsides. Ewing, Ridge. Bell, Lee.

Aster pilosus Willd. var. *pilosus*. 49712. Old field. Wilderness Road Campground. Common. Lee.

Aster prenanthoides Muhl. TP 5755. Seepy area along Station Creek. Lee.

Aster sagittifolius Wedem. ex Willd. 49685, 49701. Trailsides, roadsides, open oak forests. Bell, Lee.

Aster simplex Willd. 49619. Low woods, Davis Branch. Bell.

Aster surculosus Michaux. 49580 CG84-102. Roadside, sandy soil. Hensley Settlement. Bell.

Aster umbellatus Miller. CG84-83. Scattered wet areas. Bell, (Lee).

Aster undulatus L. 49514, 48227, TP 5739. Trailsides, open mixed oak. Ewing, Hensley Settlement. Bell, Lee.

Bidens bipinnata L. 49690, 49718. South-facing draw, dry roadbank. Ewing, Pinnacle. Bell, Lee.

Bidens polylepis Blake. 49618, 49666. Roadsides, railroad embankments. Davis Branch, Union College Environmental Education Center. Bell.

Bidens frondosa L. 49750. Dry roadside. Ewing. Lee.

Bidens tripartita L. CG85-174. Chadwell Gap Trail Wet Area. Lee.

Cacalia atriplicifolia L. 48231, 49424, 49548. Grassy roadside and trailsides. Hensley Settlement, Ewing. Bell, Lee.

Carduus discolor (Muhl. ex Willd.) Nuttall. 49610, 49753. Roadsides, waste places, old fields. Lewis Hollow, Ewing. Lee.

Carduus muticum (Michaux). Persoon. TP5334. Along Chadwell Gap Trail. Lee.

Cichorium intybus L. 48160, 49306, 49321. Dry roadsides. Common. Bell, Lee. alien.

Chrysanthemum leucanthemum L. 47820, 49553. Grassy meadow, farm fields. Wilderness Road Campground, Hensley Settlement. Bell, Lee. alien.

Conyza canadensis L. TP5303. Disturbed roadside. Claiborne.

Coreopsis major Walter var. *major*. 49314, 49320, 49519, 49894. Dry, open oak woods, trailsides and roadsides. Common. Sugar Run, Lewis Hollow. Bell, Lee.

Coreopsis tripteris L. TP5292. Crest of Cumberland Mountain. Claiborne.

- Elephantopus tomentosus* L. 49638, 49783. Trailside. Sugar run, Davis Branch. Bell.
- Elephantopus carolinianus* Willd. 49535, 49603. Roadsides, trailsides. Sugar Run, Davis Branch. Bell.
- Erechtites hieracifolia* (L.) Raf. TP5304. Disturbed areas. Claiborne.
- Erigeron annuus* (L.) Persoon. 49338, 49356, 49360, 49438, 49458, 49658. Roadsides, waste places. Hwy. 58, 998, common. Bell, Lee.
- Erigeron philadelphicus* L. 47759, 49457. Open trailside, open mixed hardwood. Sugar Run, Gibson Gap. Bell, Lee.
- Erigeron pulchellus* Michaux. 47754, 49900. Dry roadsides, open oak woods of west-facing slopes. Davis Branch. Bell.
- Erigeron strigosus* Muhl. ex Willd. 47850, 49570, 49674. Old fields, dry roadsides. Hensley Settlement, Hwy. 58. Common. Bell, Lee.
- Eupatorium album* L. TP5287. Open areas. Claiborne.
- Eupatorium aromaticum* L. 49733. Roadside, Hwy. 998. Bell.
- Eupatorium coelestinum* L. CG84-104. Disturbed area. Bell.
- Eupatorium incarnatum* Walter. TP5736. Rare among limestone boulders in barrens above Cudjo Cave. Lee.
- Eupatorium fistulosum* Baratt. 48164, 49676. Weedy old fields. Davis Branch, Martins Fork. Bell.
- Eupatorium purpureum* L. 48180, 49434, 49437, 49445, 49500. Weedy old field, open mixed oak. Ewing, Davis Branch. Bell, Lee.
- Eupatorium rotundifolium* L. var. *ovatum* (Bigel.) Torrey. Old field/abandoned homesite. Hensley Settlement. Bell.
- Eupatorium rugosum* Houttuyn. 49564, 49706, 49889. Roadside, trailside, oak woods of south-facing slope. Ewing, Hensley Settlement. Bell, Lee.
- Eupatorium serotinum* Michaux. 49656. Railroad embankment. Union College Environmental Education Center. Bell.
- Eupatorium sessilifolium* L. CG85-182. Barrens above Cudjo cave. Lee.
- Galinsoga ciliata* (Raf.) Blake. 49574. Open farm field, sandy soil. Hensley Settlement. Bell.

Gnaphalium obtusifolium L. 49582,49754. Roadsides, trailsides. Hensley Settlement, Ewing. Bell, Lee.

Gnaphalium purpureum L. var. *purpureum*. 47817. Grassy opening, roadside. Wilderness Road Campground. Lee.

Helenium autumnale L. CG84-109. Davis Branch; disturbed area. Bell.

Helenium flexuosum Raf. 48239. Roadside. Hensley Settlement. Bell.

Helianthus atrorubens L. CG84-112. Two roadside sites. Bell.

Helianthus decapetalus L. 49934. Mixed oak, southeast-facing slope. Ewing. Lee.

Helianthus divaricatus L. 49446. TP5746. Trailside, Ridge. Bell, Lee.

Helianthus hirsutus Raf. 49521. Roadside. Sugar Run. Bell.

Helianthus microcephalus T. and G. 48234,48246,49689. Old field, roadside. Hensley Settlement, Ewing. Bell, Lee.

Helianthus tuberosa L. CG85-227. Along U.S. 58 near Station Creek. Lee. alien?

Heliopsis helianthoides (L.) BSP. 49697. Open mixed hardwood, southeast-facing slope. Ewing. Lee.

Heterotheca graminifolia (Michaux) Shinnars. 49716,TP5281. Dry open trailside, sandy soil. Ridge near Pinnacle. Bell, Lee.

Heterotheca mariana (L.) Shinnars. 49714,49743,49784. Dry trailsides, roadsides, south-facing slopes mixed oak. Sugar Run, ridge, Hwy. 998. Bell, Lee.

Hieracium caepitosum Dumortier (=H. *pratense*) CG85-134. Along trails. Bell. alien?

Hieracium gronovii L. 49581,49640,49657,49782. Roadsides, trailsides. Sugar Run, Ewing. Bell, Lee.

Hieracium paniculatum L. 48175,49300,49568,49841. Roadsides, trailsides. Sugar Run, Ewing. Bell, Lee.

Hieracium scabrum Michaux. CG84-111. Along the Ridge Trail. Bell.

Hieracium venosum L. 47229. Open trailside. Sugar Run. Bell.

Krigia biflora (Walter) Blake. 47753,48244,49455,49931. Grassy trailsides and roadsides. Hensley Settlement, Hwy. 998. Ewing. Bell, Lee.

- Krigia virginica* (L.) Willd. CG85-82. Disturbed areas near Hensley Settlement. Bell.
- Kuhnia eupatoriodes* L. CG85-216. Barrens above Cudjo's Cave. Lee.
- Lactuca canadensis* L. 48219, 49329, 49409, 49442. Mixed oak, slopes and trailsides. Sugar Run, Ewing. Bell, Lee.
- Lactuca floridana* (L.) Gaertner. 48181, 49608, 49682, 49708. Roadsides. Mixed oak woods, south-facing slope. Davis Branch, Ewing. Bell, Lee.
- Liatris aspera* Michaux. CG85-186, TP5740. Openings on top of Cumberland Mountain. Bell, Lee. (Claiborne).
- Polymnia canadensis* L. 49546, 49862. Basic soil, southeast-facing slope mixed hardwood. Below Powell Valley overlook. Lee.
- Polymnia uvedalia* L. CG85-154. Limestone woods. Lee, (Claiborne).
- Prenanthes altissima* L. 49702, 49905. Mixed oak, north-facing slopes and southeast-facing draws. Shillalah, Ewing. Bell, Lee.
- Pyrrhopappus carolinianus* (Walter) DC. 48211, 48248, 49369, 49660. Dry roadsides, trailsides, railroad embankment. Union College Environmental Education Center, Ewing. Bell, Lee.
- Rudbeckia fulgida* Aiton CG85-192. Along Ewing Trail. Lee.
- Rudbeckia hirta* L. var. *hirta* 48154, 48196, 49365. Edge of old field thicket, trailside, roadside. Common. Bell, Lee.
- Rudbeckia laciniata* L. 48232. Open roadside. Martins Fork. Bell.
- Rudbeckia triloba* L. var. *triloba* 49543, 49614, 49711. Old field. Wilderness Road Campground. Lee.
- Senecio aureus* L. 47183. Mesic roadside/old field. Davis Branch. Bell.
- Senecio obovatus* Muhl. ex Willd. CG85-18. Base of Powell Mountain; woods. Claiborne.
- Senecio smallii* Britton (= *Senecio anonymous* Wood). 47846. Grassy opening, streamside. Gibson Gap. Lee.
- Silphium asteriscus* L. 48215. Mixed oak, southeast-facing slope. Ewing. Lee.
- Silphium terebinthinaceum* Jacq. CG85-209, CG85-218. Limestone woods near Cudjo Cave. Lee.
- Silphium trifoliatum* L. var. *latifolium* Gray. CG85-191. Ewing Trail; woods. Lee.

- Silphium trifoliatum* L. var. *trifoliatum*. CG85-149. Along the road from Cumberland Gap (the town) to Tipell. Claiborne.
- Solidago altissima* L. 49818. Old field. Common. Wilderness Road Campground. Lee.
- Solidago arguta* Aiton var. *caroliniana* Gray TP5284. Scattered along the Ridge Trail. Lee, (Harlan).
- Solidago arguta* Aiton var. *arguta*. 49810. Davis Creek. Bell.
- Solidago bicolor* L. 48245, 49584, 49774, 49801, 49817. Open roadsides, mixed oak woods edges. Common. Hensley Settlement, Ewing. Bell, Lee.
- Solidago caesia* L. 49436, 49805, 49806, 49812. Mixed oak woods, roadside. Ridge, Davis Branch. Bell, Lee.
- Solidago curtisii* T. and G. var. *curtisii* 48240. TP5339. Trailside, mixed pine-oak. Common. Hensley Settlement. Bell.
- Solidago erecta* Pursh 49815. Grassy area near stream. Davis Branch. Bell.
- Solidago flaccidifolia* small. TP5341, CG84-120. Woods. Bell, Lee.
- Solidago flexicaulis* L. 49704, 49797. Trailside, mixed oak, southeast-facing draw. Chadwell Gap, Ewing. Lee.
- Solidago gigantea* Aiton. 48247, 49538, 49601. Old fields, roadsides. Davis Branch, Wilderness Road Campground. Lee.
- Solidago nemoralis* Aiton. 49621, 49752, 49789, 49813. Roadsides, mixed oak. Davis Branch, Ewing, Sugar Run. Bell, Lee.
- Solidago odora* Aiton. TP5283. Opening along the crest of Cumberland Mountain. Claiborne.
- Solidago patula* Muhl. 49757. Low wet woods. Yellow Creek. Bell.
- Solidago rigida* L. var. *rigida*. CG85-199. Barrens above Cudjo Cave particularly in the quarry area in the "Gap". Lee.
- Solidago roanensis* Porter 48186, 49569, TP5326. Roadside, sandy soil. Hensley Settlement. Bell.
- Solidago rugosa* Miller var. *rugosa*. 49602, 49803, 49807, 49816. Roadside/streamside. Davis Branch. Bell.
- Solidago sphacelata* Raf. CG85-202. Dry woods. Lee.
- Sonchus asper* (L.) Hill. 49731. Roadsides, Hwy. 998. Bell. alien.

Taraxacum officinale Wiggers. 47151,49723,49932. Grassy openings. Sugar Run, Wilderness Road Campground. Common. Bell, Lee. alien.

Verbesina alternifolia (L.) Britton ex Kearney. 48202,49369,49668, 49698. Roadside, old field. Union College Environmental Education Center, Ewing. Bell, Lee.

Verbesina occidentalis (L.) Walter. 49609,49647. Old field, roadsides. Lewis Hollow, Davis Branch. Bell, Lee.

Vernonia altissima Nutt. 49617,49790. Weedy old fields. Wilderness Road Campground, Davis Branch. Bell, Lee.

BALSAMINACEAE

Impatiens capensis Meerb. 48199,49412,49675,49767. Mesic coves, streamsides, wet roadsides. Ewing, Davis Branch, Union College Environmental Education Center. Bell, Lee.

Impatiens pallida Nuttall. 48220,49707,49890. Draw with intermittent stream, mixed oak woods. Ewing. Lee.

BERBERIDACEAE

Caulophyllum thalictroides L. CG85-29. Moist woods near Bannerfield Road. Claiborne.

Podophyllum peltatum L. 47832. Trailside, southeast-facing slope. Chadwell Gap. Lee.

BETULACEAE

Alnus serrulata (Aiton) Willd. 49305,49622. Streamsides. Davis Branch. Bell.

Betula lenta L. 47773. Cove woods. Sugar Run, Martins Fork. Bell.

Betula lutea Michaux f. 49881. Lower north-facing slopes. Bell.

Betula nigra L. 49392. Stream flat. Union College Environmental Education Center Bell.

Carpinus caroliniana Walter. 48201,49277,49353,49393. Streambanks, low woods. Bell, Lee.

Corylus americana Walter. 49294,49372,49788. Streamsides, edge of mixed oak-pine. Davis Branch, Laurel Branch, Wilderness Road Campground. Bell, Lee.

Ostrya virginiana (Miller) K. Koch. 49496. Limestone ledge southeast facing slope. Lee.

BIGNONIACEAE

Anisostichus capreolata (L.) Bureau. CG85-158. Non-acid woodlands. Lee.

BORAGINACEAE

Cynoglossum virginianum L. CG85-61. Widely scattered and uncommon in woods. Lee, Bell.

Lithospermum canescens (Michaux) Lehmann. CG85-25. Limestone barrens. Claiborne, Lee.

Lithospermum latifolium (Michaux) Gromwell. TP5535 Bannerfield Road. Claiborne.

BRASSICACEAE

Arabis canadensis L. 49432. Northeast-facing cove. Ridge trail. Bell.

Arabis laevigata (Muhl. ex Willd.) Poiret CG85-34. Rocky limestone woods. Lee.

Barbarea vulgaris R. Brown 47800, 49349. Old field edges. Wilderness Road Campground, Davis Branch. Bell, Lee. alien.

Brassica napus L. 47166. Roadside. Virginia picnic area. Lee. alien.

Capsella bursa-pastoris (L.) Medicus. 48223. Roadside. Hwy. 998. Bell. alien.

Cardamine angustata O.E. Schulz. var. *angustata* (= *Dentaria heterophylla* Nuttall). CG85-3. Woods. Bell.

Cardamine concatenata (Michaux) Ahles (= *Dentaria lacinata* Willd.). No specimen. Pounds sight record. Lewis Hollow; woods. Lee.

Cardamine diphylla (Michaux) Wood (= *Dentaria diphylla* Michaux). 47219. Open mixed hardwood forest, southeast-facing slope. Chadwell Gap. Lee.

Cardamine hirsuta L. 47167. Low mesic area roadside. Davis Branch. Bell.

Cardamine pensylvanica Muhl. CG85-19. In stream bed; southwest corner of the park. Claiborne.

Cardamine rotundifolia Michaux. CG85-33, CG85-95, CG85-125, CG85-62. Scattered in stream beds. Lee, Claiborne, Bell.

Lepidium virginicum L. 49360, 49631. Old field edge-roadside. Wilderness Road Campground. Lee.

Nasturtium officinale R. Brown. CG85-228. Streams. Lee. alien.

CALLITRICHACEAE

Callitriche heterophylla Pursh. 47212. Aquatic in spring. Chadwell Gap. Lee.

CAMPANULACEAE

Campanula americana L. 49499, 49539, 49693. Protected at base of limestone ledge, mesic trailside. Gibson Gap. Lee.

Campanula divaricata Michaux. 48194, 48236. Roadsides, edge of old field thickets. Hensley Settlement. Bell.

Lobelia cardinalis L. 49632. Wet grassy roadside. Davis Branch. Bell.

Lobelia inflata L. 48178, 49508, 49571, 49626. Dry roadsides, Hwy. 998. Common. Ewing. Bell, Lee.

Lobelia puberula Michaux. 49633. Low mesic roadside. Davis Branch. Bell.

Lobelia siphilitica L. 49678. Streamside, mixed hardwood, south-facing slope. Ewing. Lee.

Lobelia spicata Lam. 49726, 49732. Roadside ditch, Hwy. 998. Bell.

Specularia perfoliata (L.) A. DC. 49289. Dry roadside. Davis Branch. Bell.

CAPRIFOLIACEAE

Lonicera japonica Thunberg. 47818, 49331, 49655. Roadsides, waste places. Common throughout. Bell, Lee. alien.

Sambucus canadensis L. 49280, 49304, 49334, 49335, 49399. Streamsides, mesic coves. Davis Branch, Lewis Hollow. Bell, Lee.

Symphoricarpos orbiculatus Moench. TP5275. Disturbed woods. Claiborne, Lee. alien.

Triosteum aurantiacum Bicknell. CG85-64. Limestone areas. Lee.

Viburnum acerifolium L. 49849. Mixed oak-hickory cove, west-facing slope. Laurel Branch drainage. Bell.

Viburnum cassinoides L. 48168, 49595, 49829. Low wet areas, streamsides, coves. Davis Branch, Chadwell Gap. Bell, Lee.

Viburnum prunifolium L. 49845. South-facing cove. Lewis Hollow. Lee.

Viburnum rufidulum Raf. TP5550. Limestone areas. Lee.

CARYOPHYLLACEAE

Arenaria glabra (Michaux) (= *Minuartia glabra*) (Michaux) Mattf.).
CG84-42. Cliff edge; White Rocks. Harlan.

Cerastium vulgatum L. (= *Cerastium holosteoides* var. *vulgare* (Hartman)
Hylander). 47788. Grassy, shady roadside. Davis Branch. Bell. alien.

Dianthus armeria L. 47825, 49282, 49296, 49542, 49677. Roadsides. Common.
Bell, Lee. alien.

Paronychia argyrocoma (Michaux) Nuttall. See Cranfill 1981. Cliff edge;
White Rocks. Harlan.

Paronychia canadensis (L.) Wood. CG85-159. Openings in limestone woods.
Lee.

Saponaria officinalis L. 49541. Old field. Wilderness Road Campground.
Lee. alien.

Silene ovata Pursh. CG85-102, CG84-70. Woods and woods edges.
Claiborne, Lee, (Bell).

Silene rotundifolia Nutt. CG85-142. Sandstone ledges particularly
near the Pinnacle. Lee.

Silene virginica L. 47826. Mixed oak woods, southeast-facing slope.
Gibson Gap. Lee.

Stellaria media (L.) Cryillo. 47165. Open grassy area. Virginia picnic
area. Lee.

Stellaria pubera Michaux. 47169, 47801. Shady roadside. Beech woods.
Davis Branch. Bell.

CELASTRACEAE

Celastrus scandens L. TP5296. Limestone woods. Claiborne, (Lee).

Euonymus americanus L. 47243, 49361. Grassy trailside, old field
streamside. Sugar Run, Wilderness Road Campground. Bell, Lee.

Euonymus atropurpureus Jacquin. CG85-170. Near U.S. 58 West of Station
Creek. Lee.

CHENOPODIACEAE

Chenopodium ambrosioides L. 49607. Wet roadside. Davis Branch. Bell.
alien.

Chenopodium album L. 49575. Open recently cleared field.
Hensley settlement. Bell.

CLISTACEAE

Lechea racemulosa Michaux. CG84-36. Cliff edge near the Ridge Trail.
Bell.

CONVOLVULACEAE

Calystegia sepium (L.) R. Brown. 47847. Mixed oak hickory, west-facing
slope. Laurel Branch. Bell.

Cuscuta gronovii Willd ex R. and S. 49406, 49624, 49667, 49683. Parasite
on woody herbs. Roadsides and streamsides. Davis Branch. Bell, Lee.

Ipomoea pandurata (L.) G.F.W. Meyer 49662. Railroad embankment.
Union College Environmental Education Center. Bell.

CLETHRACEAE

Clethra acuminata Michaux. 48173. Streamsides with Rhododendron.
Martins Fork. Bell.

CORNACEAE

Cornus alternifolia L. CG85-86. A moist site along the Ridge Trail.
Bell.

Cornus florida L. 47187, 49471. Very common understory in oak woods.
Throughout. Bell, Lee.

CRASSULACEAE

Sedum ternatum Michaux. 47176, 47218, 49493. Shaded rocks and tree bases
with mosses. Station Creek; rock ledges. Bell, Lee.

CUCURBITACEAE

Sicyos angulatus L. 49738. Ditch, roadside. Union College
Environmental Education Center. Bell.

DIAPENSIACEAE

Galax urceolata (Poiret) Brummitt (= *Galax aphylla* L.). 47785. Mixed
oak, south-facing protected slope near spring. Infrequent. Sugar Run.
Bell.

DIPSACACEAE

Dipsacus sylvestris Hudson. 49533. Roadside. Iron Furnace. Claiborne,
Lee. alien.

EBENACEAE

Diospyros virginiana L. 49661. Old field. Davis Branch. Bell.

ERICACEAE

Chimaphila maculata (L.) Pursh. 47163, 49506, 49520. Litter of mixed oak, pine-oak woods. All slopes. Common. Bell, Lee.

Epigaea repens L. 47172. Trailside. Sugar Run. Bell.

Gaultheria procumbens L. 49389. Open mixed oak-pine with several boulders on soil surface. Sugar Run. Bell.

Gaylussacia baccata (Wang.) K. Koch. 49430. Common understory shrub on intermediate to dry slopes. Mixed oak. Bell, Lee.

Kalmia latifolia L. 47774. Common understory on most slopes. Replaces R. maximum on drier slopes above streams. Throughout. Bell, Lee.

Lyonia ligustrina (L.) DC. CG84-23. wet areas along the Ridge Trail. Bell.

Monotropa hypopithys L. 48242, 49312. Pine stands and oak litter on mesic slopes. Hensley Settlement. Gibson Gap. Bell, Lee.

Monotropa uniflora L. 49827, 49856. In pine and mixed oak litter. Sugar Run, Ridge. Bell, Lee.

Oxydendrum arboreum (L.) DC. 47765, 48229, 49283, 49473. Very common understory tree in all but the most mesic sites. Throughout. Bell, Lee.

Rhododendron catawbiense Michaux. 49884. Streamside. Shillalah. Bell.

Rhododendron cumberlandense Braun. 49279. west facing slope, mixed hardwood. Hwy. 998. Bell. (Lee, sight report by Pounds).

Rhododendron maximum L. 47772, 48208, 49426, 49375. Common streamside and on sandstone ledges. Throughout. Bell, Lee.

Rhododendron roseum (Loisel.). Rehder. TP5528. Powell Mountain and Cumberland Mountain; upland woods. Claiborne, (Harlan).

Vaccinium constablei Gray. 49429. Sandstone ledge, south-facing slope. Gibson Gap. Lee.

Vaccinium erythrocarpum Michaux. CG84-46, CG85-138. Woods in the White Rocks area. Harlan, Lee.

Vaccinium stamineum L. var. *stamineum*. 47786, 47848, 49478, 49587. Common understory of mixed oak. Throughout. Bell, Lee.

Vaccinium vacillans Torrey. 48172,49276,49705. Understory of mixed oak on intermediate to dry slopes. Common. Bell, Lee.

EUPHORBIACEAE

Acalpha rhomoidea Raf. CG85-200. Barrens above Cudjo Cave. Lee. alien.

Euphorbia corollata L. 48157,48224,49317,49415,49505. Open to shaded road and trailsides, open mixed hardwoods. Common. Bell, Lee.

Euphorbia dentata Michaux. 49663. Railroad embankment. Union College Environmental Education Center. Bell.

Euphorbia maculata L. 49736. Open dry roadside, Hwy. 998. Bell.

Euphorbia mercurialina Michaux. CG85-93. Mesic woods in the extreme southwest corner of the park. Claiborne.

FABACEAE

Albizia julibrissin Dirazzini. 49729. Roadside. Hwy. 998. Bell. alien.

Amphicarpa bracteata (L.) Fernald var. *bracteata*. 48238,49895. Edge of young second growth on old field. Hensley Settlement. Bell.

Apios americana Medicus. 48204,49410. Roadside/streamside. Union College Environmental Education Center. Bell.

Cassia marilandica L. CG84-106. Uncommon on limestone slopes. Lee.

Cassia nictitans L. 49552,49623,49751. Sandy fields and roadsides; shale bank. Hensley Settlement, Davis Branch, Ewing. Bell, Lee.

Cercis canadensis L. 47181. Roadside, Hwy. 998. Bell.

Clitoria mariana L. CG85-122. Along the exit trail from Cudjo Cave. Lee.

Coronilla varia L. 49695. roadside, lower Ewing trail. Lee. alien.

Desmodium canescens (L.) DC. 49559. Old field. Hensley Settlement. Bell.

Desmodium dillenii Darl. 48235,49634,49639. Roadside, sandy farm fields. Hensley Settlement, Davis Branch. Bell.

Desmodium glutinosum (Muh. ex Willd.) Wood. 49418,49896. Common but (fewer than *D. nudiflorum*) with mixed oak. Bell, Lee.

Desmodium laevigatum (Nuttall) DC. Roadside, Hensley Settlement. Bell.

Desmodium nudiflorum (L.) DC. 48228, 49497, 49515, 49694, 49699, 49715.
Common throughout as undergrowth of mixed oak on most slopes. Bell, Lee.

Desmodium paniculatum (L.) DC. 49634, 49742. Open roadside, Hwy. 998.
Bell.

Desmodium rotundifolium DC. 49380. Mixed hardwood forest edge.
Davis Branch. Bell.

Desmodium viridiflorum (L.) DC. 49696. Dry open roadsides.
Hensley Settlement, Ewing. Bell, Lee.

Galactica volubilis (L.) Britton. 49850. TP5744. Mixed oak, west-
facing slope. Laurel Branch drainage. Bell, Lee.

Gleditsia triacanthos L. 49739. Low wet area. Yellow Creek. Bell.

Lathyrus latifolius L. 49525. Roadside. Iron Furnace. Claiborne, Lee.

Lathyrus venosus Muhl. ex Willd. CG85-55, CG85-53. Widely scattered
along the Ridge Trail and seen once on the limestone barrens. Lee,
Bell, (Harlan).

Lespedeza hirta (L.) Hornemann. CG85-188. Along the Ridge Trail. Bell.

Lespedeza intermedia (S. Watson) Britton. TP5733. Along the Ridge
Trail east of the Pinnacle. Bell.

Lespedeza procumbens Michaux. CG85-181. Limestone barrens and disturbed
areas. Lee.

Lespedeza repens (L.) Barton. 49770. Dry sandstone outcrop-roadbank.
Pinnacle Road. Bell.

Lespedeza striata (Thunberg) H. and A. 49664. Railroad embankment.
Union College Environmental Education Center. Bell.

Melilotus alba Desr. 49323. Roadside. Wilderness Road Campground.
Lee. alien.

- *Melilotus officinalis* (L.) Lam. 49324. Roadside. Wilderness Road
Campground. Lee. alien.

Phaseolus polystachios (L.) BSP. CG85-157. Limestone barrens. Lee.

Pueraria lobata (Willd.) Ohwi. 49532. Roadside. Iron Furnace.
Claiborne, Lee. alien.

Robinia hispida L. 47807, TP5530. Open pine-oak ridge forest, Lee.
Bell. (R. Kelsey in Hinkle 1975).

Robinia pseudo-acacia L. 49419. Common on limestone soil, southeast-facing slope of mountain. Lee.

Tephrosia virginiana (L.) Persoon. 49858. Mixed oak-pine, southeast-facing slope. Ridge shelter. Lee.

Trifolium campestre Schreber. 47811,49322. Roadside. Wilderness Road Campground. Lee. alien.

Trifolium pratense L. 47241. Old field edge. Davis Branch. Bell. alien.

Trifolium repens L. 47812. Grassy roadside. Wilderness Road Campground. Lee. alien.

Vicia caroliniana Walter. 47152. Mixed oak, trailside. Sugar Run. Bell.

FAGACEAE

Castanea pumila (L.) Miller 48205,49395. Roadside-streamside. Union College Environmental Education Center. Bell.

Castanea dentata (Marshall) Borkh. 49475. Mixed hardwood forests. Common. Bell, Lee.

Fagus grandifolia Ehrhart. 47236,49286. Mesic woods. Davis Branch, Sugar Run. Bell.

Quercus alba L. 47227,47761. Mixed oak. Most of more mesic slopes. Common. Bell, Lee.

Quercus coccinea Muench. 49427. Sandstone outcrops and very dry ridges, slopes. Bell, Lee.

Quercus falcata Michaux var. *falcata*. 49781. Trailside-oak woods. South-facing slope. Sugar Run. Bell.

Quercus marilandica Muench. 49854. Xeric ridges. Sugar Run area. Bell.

Quercus muehlenbergii Englem. 47763. Mixed oak, basic soils. Sugar Run, Lewis Hollow. Bell, Lee.

Quercus prinus L. 47237,47803,49466,49918. Mixed oak. Both scarp and dip slopes. Dry to mesic sites. Very common. Bell, Lee.

Quercus rubra L. 47235,49472,49920. Mixed oak on good sites of both scarp and dip slopes. Bell, Lee.

Quercus velutina Lam. 49470,49919. Common on most dry slopes. Mixed oak. Bell, Lee.

FUMARIACEAE

Adlumia fungosa (Aiton) Greene. CG84-9. Widely scattered in cool, rocky woods. Bell, Lee.

Corydalis sempervivens (L.) Persoon. CG84-29. One site on open rocks near the Ridge Trail. Bell.

GENTIANACEAE

Gentiana decora Pollard CG84-101,49585. Throughout, especially at the higher elevations. Bell, Harlan, Claiborne. (*G. saponaria* in Hinkle 1975).

Gentiana villosa L. CG85-230. Non-limestone woods; seen twice. Lee, Bell.

Obolaria virginica L. 47162. Mixed oak-pine south-facing slope. Skylight Cave Trail. Lee.

Sabatia angularis (L.) Pursh. 48159,49670. ditch, shady trail/forest edge. Davis Branch, Misha Mokwa Trail. Bell, Lee.

GERANIACEAE

Geranium carolinianum L. 47239,49832. Open trailside. Davis Creek. Bell.

Geranium maculatum L. 47156,47290,49926,49927. Shaded trailsides, mesic woods. Common. Bell, Lee.

HAMAMELIDACEAE

Liquidambar styraciflua L. 49474,49831. Streamside, northwest-facing draw. Sugar Run, Wilderness Road Campground. Bell, Lee.

Hamamelis virginiana L. 47769,48184. Common understory of mesic woods. Bell, Lee.

HIPPOCASTANACEAE

Aesculus octandra Marshall. 49833. Mesic woods, north-facing slope. Devil's Garden. Bell.

HYDROPHYLLACEAE

Phacelia bipinnatifida Michaux. 47198. Mixed hardwoods, boulder field, northeast-facing slope. Devil's Garden. Bell.

Phacelia purshii Buckley. CG85-58. Bottoms along Little Yellow Creek. Bell.

HYPERICACEAE

Hypericum gentianoides (L.) BSP. 48237, 49555, 49576. Open farm field, sandy soil. Hensley Settlement. Bell.

Hypericum mutilum L. CG85-173. Chadwell Gap Trail Wet Area; boggy. Lee.

Hypericum punctatum Lam. 49290, 49350, 49384, 49421, 49516, 49820. Roadsides, dry oak woods. Very common. Bell Lee.

Hypericum stragalum P. Adams and Robson. 48250, 49558, 49636. Dry sandy soil, old fields and roadsides. Hensley Settlement. Bell.

JUGLANDACEAE

Carya cordiformis (Wang.) K. Koch. 49875. Oak-hickory. Southeast-facing draw. Gibson Gap. Lee.

Carya glabra (Miller) Sweet. 49837, 49897. Oak-hickory. Dry slopes. Ridge. Bell Lee.

Carya laciniosa (Michaux f.) Loudon. Streamside. Gibson Gap. Lee.

Carya ovalis (Wang.) Sargent. 49449, 49450, 49463, 49465. Oak-hickory. Ridge. Bell, Lee.

Carya ovata (Miller) K. Koch. 49809. Oak-hickory. Southeast-facing slope. Chadwell Gap. Lee.

Carya pallida (Ashe) Engler and Graebner. 49298, 49313, 49448. Oak-hickory. Sandy ridges and slopes. Ridge. Bell, Lee.

Carya tomentosa Nuttall. 49495, 49799, 49898, 49461. Oak-hickory. Ridge. Bell.

Juglans cinerea L. 49787. Edge of hemlock stand. Sugar Run. Bell.

Juglans nigra L. 49337. Streamside-old field edge. Lewis Hollow. Lee.

LAMIACEAE

Blephilia hirsuta (Pursh) Benth. CG85-215. Stream bottom, Station Creek near U.S. 58. Lee.

Collinsonia canadensis L. 48243, 49686. Mixed oak, southeast-facing slope; mesic roadsides. Martins Fork, Ewing. Bell, Lee.

Cunila origanoides (L.) Britton. 49721. Sandstone outcrop, roadside. Pinnacle Road. Bell.

Dracocephalum virginianum L. 49528, 49600. Mesic roadsides. Davis Branch Iron Furnace. Bell, Claiborne, Lee.

Glechoma hederacea L. 47161,47790. Grassy roadsides, old fields. Davis Branch, Wilderness Road Campground. Bell, Lee. alien.

Isanthus brachiatus (L.) BSP. CG85-180. Quarry in Cumberland Gap; open limestone. Lee.

Lamium amplexicaule L. 47181. Grassy opening. Hwy. 998. Bell. alien.

Lamium purpureum L. 47180. Grassy opening. Hwy. 998. Bell. alien.

Lycopus virginicus L. 49593,49713. wet trailsides, streamsides. Hensley Settlement, Wilderness Road Campground. Bell, Lee.

Marrubium vulgare L. CG85-208. Under a limestone overhang above Cudjos Cave. Lee. alien.

Monarda clinopodia L. 48213,49233,49431,49870. Mixed oak, south and north-facing draws and flat slopes. Martins Fork, Ewing. Bell, Lee.

Monarda fistulosa L. CG85-147. Openings in limestone woods. Lee.

Perilla frutescens (L.) Britton. CG85-221. Weedy. Bell, (Lee). alien.

Prunella vulgaris L. 47842. Streamside. Gibson Gap. Lee. alien.

Pycnanthemum incanum (L.) Michaux. 49397,49673. Roadsides. Davis Branch, Union College Environmental Education center. Bell.

Pycnanthemum pycnanthemoides (Leavenw.) Fern. 49504. Roadside. Sugar Run. Bell.

Salvia lyrata L. 47238. Shady trailside. Davis Branch. Bell.

Salvia urticifolia L. 49454. Grassy openings, coves. Ridge. Bell, Lee.

Satureja vulgaris (L.) Fritsch. 48163,49359,49381. Old fields. Davis Branch, Wilderness Road Campground. Bell Lee.

Scutellaria elliptica Muhl. 49282. Mesic roadside. Davis Branch. Bell.

Scutellaria serrata Andr. CG85-119. Moist woods; along trails. Lee.

Stachys nuttallii Shuttleworth ex Benth. 48212,49342. Mixed oak, south and north-facing draws and flat slopes; streamside. Ewing, Lewis Hollow. Lee. (This taxon has been referred to as *S. riddellii* House according to Nelson 1981).

Trichostema dichotomum L. 49749. Roadside, south-facing shale bank. Ewing. Lee.

LAURACEAE

Lindera benzoin (L.) Blume. 47160,49347. Stream bank. Station Creek. Lee.

Sassafras albidum (Nuttall) Nees. 47228,49464. Disturbed sites. throughout. Bell, Lee.

LINACEAE

Linum virginianum L. 49386. Trailside/woods. Davis Branch. Bell. E.

LORANTHACEAE

Phoradendron serotinum (Raf.) M.C. Johnston. Sight record (Hinkle). Chestnut oak tree substrate. North-facing slope. Martins Fork. Bell.

MAGNOLIACEAE

Liriodendron tulipifera L. 47231. Mesic slopes and draws. Common. Bell, Lee.

Magnolia acuminata L. 49680. Southeast-facing cove. Ewing. Lee.

Magnolia fraseri Walter. 48230. Martins Fork, streamside. Bell.

Magnolia macrophylla Michaux. 49886. North-facing draw. Sand Cave. Bell, Lee.

Magnolia tripetala L. 49379,47770 CG85-177. Moist woods. Davis Branch, Laurel Branch. Bell, Lee.

MALVACEAE

Hibiscus syriacus L. 49536. Old field. Iron Furnace. Claiborne, Lee. alien.

MENISPERMACEAE

Cocculus carolinus (L.) DC. CG84-103. Limestone barrens. Lee.

Menispermum canadense L. CG85-232. Second growth woods. Lee, (Claiborne).

MORACEAE

Morus rubra L. 49368,49762. Old field, low wet area. Lewis Hollow and Yellow Creek. Bell, Lee.

NYSSACEAE

Nyssa sylvatica Marsh. 47767, 49394, 49428. Very common on all slopes, draws and ridges. Throughout. Bell, Lee.

OLEACEAE

Fraxinus americana L. var. *biltmoreana* (Beadle) J. Wright ex Fernald. 49288. Understory, mixed cove hardwood forest. Davis Branch. Bell.

Ligustrum amurense Carr. 49330. Streamside/old field edge. Lewis Hollow. Lee. alien.

ONAGRACEAE

Circaea lutetiana L. ssp. *canadensis* (L.) Aschers. and Magnus. 49414. Mixed oak, northeast-facing draw. Ridge. Bell.

Epilobium coloratum Biehler. CG85-229. One wet area along Station Creek. Lee.

Gaura biennis L. 49613, 49710, 49775. Mesic roadsides, stream/old field edges. Wilderness Road Campground. Lee.

Ludwigia alternifolia L. CG85-171. Chadwell Gap Trail. Wet land. Lee.

Oenothera biennis L. 48176, 49522, 49596, 49772. Roadsides, waste places. Common throughout. Bell, Lee.

OROBANCHACEAE

Conopholis americana (L.) Wallroth. 47217. Dry oak woods, southwest-facing slope. Chadwell Gap. Lee.

Epifagus virginiana (L.) Barton. 49748. Parasite on beech roots. Devil's Garden. Bell.

Orobanche uniflora L. 47783. Mesic trailside. Sugar Run. Bell.

OXALIDACEAE

Oxalis montana Raf. CG85-75. Deep ravines and the north-facing slope of the White rocks area. Harlan. (*O. acetosella* L. in Hinkle 1975)

Oxalis dilleni Jacquin. 47751, 47793. Grassy roadside, Hwy. 998. Bell.

Oxalis grandis small. 47827. Trailside, mixed hardwood, southeast-facing slope. Gibson Gap. Lee.

Oxalis stricta L. 49417, 49620. Mesic roadside, northeast-facing cove. Hwy. 998, Ridge. Bell, Lee.

Oxalis violacea L. 47806. Shaded, grassy trail. Ridge. Bell, Lee.

PAPAVERACEAE

Sanguinaria canadensis L. 47155, 47202, 49924. Mesic woods, boulder fields. Station Creek, Devil's Gardens. Bell, Lee.

PASSIFLORACEAE

Passiflora lutea L. 49873. Mixed oak, basic soil, southeast-facing mid-slope. Gibson Gap. Lee.

PHRYMACEAE

Phryma leptostachya L. 49887. Open mixed oak, south-facing slope. Ewing, Lee.

PHYTOLACCACEAE

Phytolacca americana L. 48174. Trailside, southeast-facing slope. Ewing, Lee.

PLANTAGINACEAE

Plantago lanceolata L. 47247, 47794, 47816, 49724. Grassy roadsides. Common. Davis Branch, Wilderness Road Campground. Bell, Lee.

Plantago major L. 49652. Dry roadside. Davis Branch. Bell.

Plantago rugelii Dcne. 49387, 49401. Roadside. Davis Branch, Union College Environmental Education Center. Bell.

Plantago virginica L. 47819, 49345. Grassy roadside. Wilderness Road Campground. Lee.

PLATANACEAE

Platanus occidentalis L. 49339. Streamside. Lewis Hollow. Lee.

POLEMONIACEAE

Phlox amplifolia Britton 49441. Dry, open oak-hickory. Ridge. Bell, Lee.

Phlox carolina L. 49804. Grassy streamside. Davis Branch. Bell.

Phlox divaricata L. 47157. Mesic woods along Station Creek. Lee.

Phlox maculata L. 49411, 49644, 49722. Mesic roadsides, streamsides. Davis Branch, Union College Environmental Education Center. Bell.

Phlox paniculata L. CG85-167. Along Davis Branch near U.S. 25. Bell.

POLYGALACEAE

Polygala sanguinea L. 48188,49557. Open field, sandy soil. Hensley Settlement. Bell. (*D. curtissi* Gray in Hinkle 1975)

Polygala senega L. 49838. Basic soil, southeast-facing slope. Ewing. Lee.

POLYGONACEAE

Polygonum arifolium L. CG84-55, TP5330. Chadwell Gap Trail wetland. Lee.

Polygonum cuspidatum Siebold and Zucc. 48249,49374. Edge of abandoned homesite; roadside. Laurel Branch, Union College EEC. Bell. alien.

Polygonum pensylvanicum L. 49563. Open roadbank. Hensley Settlement. Bell.

Polygonum persicaria L. 48187,48200,48214,49562,49737. Dry sandy roadsides. Hensley Settlement. Bell. alien.

Polygonum punctatum Ell. 49773. Low wet area in old field. Wilderness Road Campground. Lee.

Polygonum sagittatum L. 49761. Brackish marsh. Yellow Creek. Bell.

Polygonum scandens L. 49654,49798. Twining on raspberry briar-trailside; roadside. Chadwell Gap, Union College Environmental Education Center. Bell, Lee.

Rumex acetosella L. 47823. Open grassy field. Wilderness Road Campground. Lee. alien.

Rumex crispus L. 47814. Open grassy field. Wilderness Road Campground. Lee. alien.

Rumex obtusifolius L. 49307. Mesic roadside. Davis Branch. Bell. alien.

Tovara virginiana (L.) Raf. 48155,48207,49642. Mesic roadside. Wilderness Road Campground, Davis Branch. Bell, Lee.

PORTULACAEAE

Claytonia caroliniana Michaux. CG85-12. Devil's Garden, Bannerfield Road area. Bell, (Claiborne).

Claytonia virginica L. 47203. Mesic woods, northeast-facing slope. Devil's Garden. Bell.

PRIMULACEAE

Lysimachia quadrifolia L. CG85-114. Along trails. Lee.

Lysimachia tonsa (Wood) Knuth. 49299, 49422, 49439. Mixed oak, oak-hickory woods on drier sites. Ridge. Bell, Lee.

Samolus parviflorus Raf. CG85-94. Stream; southwest corner of the park. Claiborne.

RANUNCULACEAE

Actaea pachypoda Ell. 49744. Shady roadside. Hwy. 998. Bell.

Anemone quinquefolia L. CG85-2. Cool ravines and high elevation north facing slopes. Bell. (Some specimens approach *A. lancifolia*).

Anemone virginiana L. 48156, 49332, 49341. Roadside, Hwy. 58. Lee.

Aquilegia canadensis L. CG85-52. Uncommon under limestone overhangs. Lee.

Cimicifuga racemosa (L.) Nutt. 49498, 49846. Mixed oak, south-facing cove. Lewis Hollow, Gibson Gap. Lee.

Clematis dioscoreifolia Levl. and Vaniot. TP5305. Disturbed area near railroad. Claiborne.

Clematis viorna L. CG85-111. Openings on limestone slopes. Claiborne.

Clematis virginiana L. 49554, 49612. Old field edges. Hensley Settlement, Wilderness Road Campground. Bell, Lee.

Delphinium tricornis Michaux. CG85-13. Limestone woods. Claiborne.

Hepatica acutiloba DC. 47158. Rooting in litter, mixed oak. Station Creek. Lee.

Hepatica americana (DC.) Ker. 47191, 49921. Mesic woods, boulder field. Devil's Garden. Bell.

Hydrastis canadensis L. TP5533. Bannerfield Road area; rich limestone woods. Claiborne.

Ranunculus abortivus L. 47182, 47222, 47244. Grassy, shady trailsides. Davis Branch, Chadwell Gap. Bell, Lee.

Ranunculus acris L. 49534. Roadside. Iron Furnace. Claiborne, Lee. alien.

Ranunculus bulbosus L. CG85-117. Along trail near White Rocks. Bell. alien.

Ranunculus hispidus Michaux. 47214, 47221. Mesic trailside.
Chadwell Gap. Lee.

Ranunculus recurvatus Poiret. 47245, 49922. Trailside. Sugar Run.
Bell. *Thalictrum clavatum* DC. CG85-44. Wet rocks, rare. Bell, (Lee).

Thalictrum clavatum D.C. CG85-44. Wet rocks, rare. Bell, (Lee).

Thalictrum dioicum L. 47197. Boulder field; Devil's Garden. Bell.

Thalictrum polygamum Muhl. 49760. Low mesic woods. Yellow Creek. Bell.

Thalictrum revolutum DC. 47836, 49598. Edge of old field thicket.
Hensley Settlement; mixed hardwood forest, Gibson Gap. Bell, Lee.

Thalictrum thalictroides (L.) Boivin. 47164, 47828. Stream bank,
mixed oak on southeast-facing slope. Station Creek, Gibson Gap. Lee.

RHAMNACEAE

Ceanothus americanus L. 48177, 49274, 49319, 49433. Roadsides, mixed
oak forests, most slopes. Hwy. 998, Ewing. Bell, Lee.

Rhamnus caroliniana Walter. 49786. Fence row, basic soil. Chadwell Gap.
Lee.

ROSACEAE

Agrimonia gryposepala Wallroth. 48216, 48221, 49443. Open, mixed oak,
southeast-facing slopes. Ewing. Lee.

Agrimonia parviflora Aiton. 49649. Shaded roadside. Davis Branch.
Bell.

Agrimonia rostellata Wallroth. CG85-160, CG85-193. Limestone woods. Lee.

Amelanchier arborea (Michaux f.) Fernald var. *arborea*.
47179, 47243, 49876, 49925. Understory of mixed oak woods on drier sites,
Sandstone ledges. Common. Bell, Lee.

Amelanchier arborea (Michaux f.) var. *laevis* (Wiegand) Ahles. 49880.
Cove forest understory. Shillalah Creek. Bell.

Amelanchier canadensis (L.) Medicus. TP5331, TP5548. Cumberland
Mountain; ridge top, open woods. Bell.

Aruncus dioicus (Walter.) Fernald. 47843. Trailside, southeast-facing
slope. Gibson Gap. Lee.

Crataegus aff. *flabellata* (Bosc) K. Koch. Disturbed area near tower
site southwest of White Rocks. (Harlan), Lee.

- Duchesnea indica*. (Andrz.) Focke. Lawns. Throughout. Bell, Lee. alien.
- Fragaria virginiana* Duchesne. 47226. Open, grassy trailside. Sugar Run. Bell.
- Geum canadense* Jacquin. 48209,49388,49404,49423. Protected roadsides, mixed hardwoods, northeast-facing cove. Bell.
- Geum vernum* (Raf.) T. and G. 49830. Low wet area edge of mixed hardwood trailside. Davis Branch. Bell.
- Geum virginianum* L. CG85-155. Limestone woods. Lee.
- Gillenia trifoliata* (L.) Moench. 47831. Mixed oak, southeast-facing slope. Gibson Gap. Lee.
- Malus angustifolia* (Aiton) Michaux. Abandoned homesite. Sugar Run. Bell.
- Potentilla canadensis* L. 47173. Trailside. Sugar Run. Bell.
- Potentilla norvegica* L. 49371. Old field. Wilderness Road Campground. Lee.
- Potentilla recta* L. 47821,49281. Grassy meadow, roadsides. Wilderness Road Campground, Davis Branch. Bell, Lee. alien.
- Potentilla simplex* Michaux. 49855. Oak-hickory, southeast-facing slope. Woodson Gap, Gibson Gap. Lee.
- Prunus americana* Marshall. 49364,TP5743. Edge of old field. Wilderness Road Campground. Lee.
- Prunus angustifolia* Marshall. 47185. Low, old field. Davis Branch. Bell.
- Prunus persica* (L.) Batsch. 47814. Old homesite. Sugar Run. Bell. alien.
- Prunus serotina* Ehrhart. 47789,48198,49408. Old field, roadside. Sugar Run. Bell.
- Rosa setigera* L. 49325. Roadside. Lewis Hollow. Lee.
- Rosa wichuraiana* Crepin. 49285. Roadside. Davis Branch. Bell. alien.
- Rosa virginiana* Miller. TP5753. Limestone barrens above Cudjo Cave. Lee.
- Rubus allegheniensis* Porter. 49868. Roadside. Hwy. 998, oak-hickory, open southeast-facing slope. Common. Bell, Lee.

Rubus hispidus L. 47223. Roadside, Hwy. 998. Bell, Lee.

Rubus occidentalis L. TP5531. Crest of Powell Mountain. Claiborne.

Rubus odoratus L. 49872. Upper southeast-facing cove. Gibson Gap. Lee.

Spiraea pruniflora Sieb. and Zucc. 47188. Abandoned homesite.
Sugar Run. Bell. alien.

Waldensteinia fragarioides (Michaux) Tratt. CG85-1. Moist woods.
Bell, Claiborne.

RUBIACEAE

Cephalanthus occidentalis L. CG85-89. Bottoms of Little Yellow Creek.
Bell.

Diodia virginiana L. 49625. Disturbed area along Davis Branch. Bell.

Galium aparine L. 47246, 47804. Roadsides, dry mixed oak woods.
Davis Branch, Ridge. Bell, Lee.

Galium circaezans Michaux. 49857. Mixed oak, dry broad ridge.
Ridge Trail. Bell, Lee.

Galium latifolium Michaux. 49847, 49930. Mixed oak-hickory, west-
facing slope. Laurel Branch. Bell.

Galium tinctorium L. CG84-57. Wet areas. Lee.

Galium triflorum Michaux. 48162. Old field. Misha Mokwa Trail. Lee.

Houstonia caerulea L. 47168. Roadbank. Davis Branch. Bell.

Houstonia longifolia Gaertner. 47840. Grassy trailside. Gibson Gap.
Lee.

Houstonia purpurea L. 47810, 47838, 49308. Trailsides and roadbanks.
Gibson Gap. Hwy. 998. Bell, Lee.

Houstonia tenuifolia Nuttall. 48197, 49681. Dry open trail embankment.
Ewing. Lee.

Mitchella repens L. 47809, 49507. Mesic, mixed hardwood. Hemlock
and oak litter. Sugar Run, Woodson Gap. Bell, Lee.

RUTACEAE

Ptelea trifoliata L. TP5551. Limestone woods. Lee.

SANTALACEAE

Pyrularia pubera Michaux. 47781, 48226, 49405. Low woods, cove forests. Yellow Creek, Sugar Run. Bell.

SALICACEAE

Salix humilis Marshall. CG84-72. Along the Ridge Trail. Harlan.

Salix nigra Marshall. 49459. Streamside. Wilderness Road Campground. Lee.

Salix tristis Ait. CG84-66, TP5298. Along the Cumberland Trail; openings. Bell.

SAXIFRAGACEAE

Boykinia aconitifolia Nuttall. CG84-53. Uncommon along Martin's Branch. Harlan.

Heuchera americana L. 47248, 49252. Mixed oak, northwest-facing slope. Sugar Run. Bell.

Heuchera parviflora Bartling. CG84-82. Shaded sandstone ledges. Bell. (*H. hirsuticaulis* in Hinkle 1975).

Heuchera villosa Michaux. CG85-135, TP5543. Rocky Woods. Lee.

Hydrangea arborescens L. 47844, 48195, 49278, 49295, 49891. Mesic slopes and draws. Common as understory to mixed oak. Bell, Lee.

Mitella diphylla L. CG85-15. Bannerfield Road area; rich woods near stream. Claiborne.

Philadelphus hirsutus Nuttall. 49860. Limestone ledge off Ridge Trail, southeast-facing slope. Lee, Bell.

Saxifraga michauxii Britton. CG84-100. Wet and/or shaded cliffs. Harlan, (Lee).

Tiarella cordifolia L. 47199, 47778. Streamside, mesic woods of northeast-facing slope. Sugar Run, Devil's Garden. Bell.

SCROPHULARIACEAE

Agalinis tenuifolia (Vahl.) Raf. 49769. Sandstone outcrop, roadside. Pinnacle Road. Bell.

Aureolaria flava (L.) Farwell. CG85-203. Limestone woods. Lee.

Aureolaria laevigata (Raf.) Raf. 48241, 49444, 49512. Dry trailsides, oak woods. Common Bell, Lee.

- Aureolaria pedicularis* (L.) Raf. CG84-98. Dry, sunny openings. Lee.
- Chelone glabra* L. 49592. Wet trailside. Hensley Settlement. Bell.
- Gratiola virginiana* L. CG85-10. Small pond near the I. and R.M. workshop. Bell.
- Melampyrum lineare* Desr. CG84-3. Common at higher elevations particularly woods edges. Bell, (Harlan).
- Mimulus alatus* Ait. 49531. Roadside ditch. Iron Furnace. Claiborne, Lee.
- Paulownia tomentosa* (Thunberg) Steudel. Common roadsides. Bell, Lee. alien.
- Pedicularis canadensis* L. 47213, 49456. Mesic trailsides, streamside. Sugar Run, Wilderness Road Campground. Bell, Lee.
- Penstemon brevisepalus* Pennell. CG85-65, L.J. Utta 7211 at V.P.I. Openings in limestone woods. Lee.
- Penstemon canescens* Britton. 47835, 49416. Northeast-facing cove; southeast-facing slope mixed hardwood. Ridge, Gibson Gap. Bell, Lee.
- Verbascum thapsus* L. 49524, 49727. Roadside. Hwy. 998. Bell.
- Veronica anagallis-aquatica* L. CG85-92. Stream bed in southwest corner of the park. Claiborne.
- Veronica officinalis* L. 47805. Grassy opening. Ridge trail. Bell, Lee.
- Veronica serpyllifolia* L. TP5546. Disturbed areas. Lee. alien.

SIMAROUBACEAE

- Aitanthus altissima* (Miller) Swingle. Disturbed areas, especially roadsides. Common. Bell, Lee. alien.

SOLANACEAE

- Physalis heterophylla* Nees. CG85-120. Trail side. Lee.
- Physalis virginiana* Miller var. *virginiana*. 49611. Roadside. Wilderness Road Campground. Lee.
- Solanum carolinense* L. 49407, 49545, 49627. Dry grassy roadsides. Hwy. 998 and 58. Bell, Lee.

TILIACEAE

Tilia americana L. 47766, 49379, 49691, 49893. Mesic cove forests, scattered, mostly north-facing slopes. Laurel Branch, Martins Fork, Ewing. Bell, Lee.

Tilia heterophylla Vent. 49692. Southeast-facing draw. Ewing. Lee.

ULMACEAE

Celtis occidentalis L. 49344. Edge of old field. Wilderness Road Campground. Lee.

Celtis occidentalis L. var. *georgiana* (Small) Ahles. 49874. South-facing slope, basic soil. Mid slope over limestone. Lee.

Ulmus alata Michaux. 48151. Fence row. Wilderness Road Campground. Lee.

Ulmus americana L. 49284. Low woods. Davis Branch. Bell.

Ulmus rubra Muhl. 49796. Edge of spring seepage, understory in mixed oak on more basic soil. Chadwell Gap. Lee.

URTICACEAE

Boehmeria cylindrica (L.) Sw. CG85-175. Moist bottoms. Lee, Bell.

Laportea canadensis (L.) Weddell. 48179, 49326. Southeast-facing draw, mixed oak, low woods. Ewing, Lewis Hollow. Lee.

Pilea pumila (L.) Gray. 49630, 49828. South-facing cove, low woods. Chadwell Gap, Davis Branch. Bell, Lee.

VERBENACEAE

Verbena urticifolia L. 48203, 49604, 49659. Dry roadsides, railroad embankments. Hwy. 998, Union College Environmental Education Center. Bell.

VIOLACEAE

Hybanthus concolor (Foster) Sprengel. CG85-33.5. Rocky limestone woods. Lee.

Viola affinis Le Conte. TP5544, CG85-46. Woods. Lee.

Viola blanda Willd. 47174, 49488, 49908, 49910. Mesic trailsides, stream banks. Very common. Bell, Lee.

Viola canadensis L. Pounds sight record. Rich woods. (Claiborne), (Lee).

Viola conspersa Reichenbach. 47791. Grassy, mesic trailside. Davis Branch. Bell.

Viola cucullata Aiton. 47841. Streamside. Station Creek. Lee.

Viola eriocarpus Schweitz var. *leiocarpus* Fernald and Wegand. CG85-17. Rich woods. Claiborne.

Viola hastata Michaux. 47170, 47194. Hemlock stand, mixed hardwoods of northeast-facing slope. Sugar Run, Devil's Garden. Bell.

Viola hirsutula Brainerd. CG85-7. Along Chadwell Gap Trail. Lee.

Viola macloskeyi var. *pallens* (Banks ex DC) C.L. Hitchcock. 47193. Mixed hardwoods, northeast-facing slope. Devil's Garden. Bell.

Viola palmata L. var. *sororia* (Willd.) Pollard. 49867. Oak-hickory, southeast-facing slope, basic soil. Gibson Gap. Lee.

Viola palmata L. var. *triloba* (Schweinitz) Ging. ex DC. 49835. Mesic streamside forest. Sugar Run. Bell.

Viola papilionacea Pursh. 47153, 47196, 49909, 49911, 49912, 49913. Shady roadsides and woods. Throughout. Bell, Lee.

Viola pedata L. var. *lineariloba* DC. 49719. Sandstone outcrop, roadside. Pinnacle Road. Bell.

Viola rafinesquii Greene. 47159. Grassy clearing. Wilderness Road Campground. Lee.

Viola rotundifolia Michaux. 47205. Streamside. Devil's Garden. Bell.

Viola sagittata Aiton. 47220. Near spring seepage. Chadwell Gap. Lee.

Viola striata Aiton. 47822. Grassy area by Station Creek. Greenleaf Nature Trail. Lee.

VITACEAE

Parthenocissus quinquefolia (L.) Planchon. 47792. Mixed pine-oak, oak. Sugar Run. Bell.

Vitis aestivalis Michaux. 47232, 47808, 49834. Mixed oak, southeast-facing slopes; mixed pine-hardwoods, Sugar Run. Bell, Lee.

Vitis cinerea Engelm ex Millardet. 49358. Old field edge. Wilderness Road Campground. Lee.

Vitis rotundifolia Michaux. 49435. Mixed oak woods. Bell, Lee.

Vitis vulpina L. 49863,49869. Basic soil, mixed oak, southwest-facing slope. Lewis Hollow. Lee.

Appendix C

Comments for Each Species on Park Rare Plant List

Adlumia fungosa (allegheeny vine) - rocky woods. Three plants seen in the Chadwell Gap area and another plant two miles further east on the ridge Trail. Also two plants in Devil's Garden. A biennial, so locations will change frequently.

Agrimonia gryposepala (an agrimony) - None of the collections we have seen from the Park have mature fruits, so the identifications must be considered tentative. Rich woods; along Ewing Trail.

Amianthium muscaetoxicum (fly poison) - Woods. The plants were found in small groups in the three ravines shown on the map (about 30 plants, 5 with flowers).

Arenaria (Minuartia) glabra (a sandwort) - Full sun, growing in very shallow soil on the top of the White Rocks. These plants could be trampled by heavy visitor use of the White Rocks (see Appendix A). This plant could easily be extirpated (less than 20 plants). Map 2.

Aster acuminatus - Cool, moist, woods. Found at Sand Cave and just north of the White Rocks. Also seen twice at lower elevation in cool ravines of the Martin's Branch drainage.

Aster surculosus - Found infrequently along the Ridge Trail in sunny, shallow soil over sandstone.

Blephilia hirsuta (hairy wood-mint) - One site, a shaded stream bottom. Station Creek near U.S. 58.

Boykinia aconitifolia (brook saxifrage) - Shores of Martin's Branch but rare. Previously the only site for KY was outside the park on Martin's Branch.

Calamagrostis porteri (Porter's reed grass) - Sporadic along the Ridge Trail and wooded slopes on the southeast face of Cumberland Mountain in the Park. Dry, bouldery habitat. Map 1.

Cardamine rotundifolia - Shaded streams. Found at four widely scattered sites on streams in different drainages. Map 1.

Carex austrocaroliniana - Seen once in ridge top forest southwest of the White Rocks. (Near the state line; thus the specimen may actually be from VA.). Harlan.

Carex careyana - Limestone woods along Bannerfield Road in TN. It is listed for VA and possible habitat for the species does occur in the VA portion of the park.

Carex leptalea - Wet area along the Ridge Trail in Bell County.

Carex purpurifera (a sedge) - Moist limestone woods just above Skylight Cave and probably at another similar site (no mature plants were seen) to the east. Bryson's VA record is probably just east of the park. (See Bryson 1980).

Castanea pumila (chinquapin) - Dry woods. Found west of U.S. 25 along the crest of Cumberland Mountain down the KY side but is uncommon. Map 1.

Cheilanthes alabamensis (smooth lip fern) - Sunny limestone cliffs. Known in VA only from Lee County but not seen recently until this study (pers. comm. from Tom Weibold). It is fairly common above Cudjo Cave and was also seen west of Lewis Hollow and just east of the headwaters of Station Creek. Map 1.

Convallaria montana (a lily of the valley) - Woods. Found along the crest of the Cumberland Mountains. Two sites west of U.S. 25 and extensive colonies east of the Pinnacle with colonies extending down the north-facing slope in ravines. Map 1.

Corydalis sempervirens (pale corydalis) - Sunny, shallow soil over sandstone. Present only on one outcrop. Seen there in 1984 but not in 1985. This is to be expected since the plant is a biennial.

Cypripedium parviflorum (small yellow lady-slipper) - Often considered a variety, *C. calceolus* var. *parviflorum*. Seen on the slopes of Cumberland Mountain above the sinks along Bannerfield Road. We believe it can be seen elsewhere, but we did not pay careful attention to which one of the two yellow lady-slippers was present until *C. parviflorum* was recognized on the KY list.

Diarrhena americana (American beakgrass) - Open woods over sandstone. One site just to the north of the crest of Cumberland Mountain. Perhaps overlooked elsewhere.

Disporum maculatum (spotted Mandarin) - Moist, rich woods. One site only near the stream in the Bannerfield Road area. Map 1.

Euphorbia mercurialina (a spurge) - Stream bottom. Seen once (see map 1). More common just outside the park in woods over limestone.

Gentiana decora (showy gentain) - Woods and woods edges. Widely scattered in the park, particularly in higher elevation areas.

Glyceria melicaria (a manna grass) - Shady, wet areas. Known along the Ridge Trail at a few places and along the stream just below Sand Cave.

Helianthus atrorubens (a sunflower) - Beside KY 1988 (about 5 plants) and also beside the Pinnacle Road (about 15 plants). Could easily be

extirpated by mowing or other roadwork; however, an open habitat (in this case, maintained by mowing) is required by the species. Perhaps the best policy would be to mow the margins during spring only.

Heuchera parviflora (little leaved alumroot) - Most common under sandstone overhangs. Probably throughout the Park in this habitat. Called *H. hirsuticaulis* in Hinkle 1975.

Hexastylis heterophylla (a heart-leaf) - Growing throughout the Park in non-limestone woods. Plants from the White Rocks area tend to be smaller. Called *H. virginica* in Hinkle 1975. Used Blomquist 1957 for the identification. Confirmed by a specialist in the genus L.L. Gaddy.

Hieracium scabrum (a hawkweed) - Along the Ridge Trail in sunny, dry places.

Hydrastis canadense (golden seal) - Rich limestone woods. Found only in the Bannerfield Road area. Map 1.

Lathyrus venosus (bushy vetch) - Openings. Most common along the crest of Cumberland Mountain but also seen once on a limestone barren.

Liatris aspera (a blazing star) - Openings. Two sites on the crest of Cumberland Mountain, one east of U.S. 25 and the other west. Another site in the cedar barrens above Cudjo Cave. Map 1.

Lilium canadense (Canada lily) - Rich woods or woods edges. Along the Ewing trail in the sinks area, along Bannerfield Road and along the Ridge Trail near the White Rocks. Map 1.

Listera smallii (Small's twayblade) - Found under rhododendrons in the Shillalah and Martin's Creek drainages. Seen only at three sites but the species is extremely inconspicuous. The inconspicuousness, remoteness, and lack of threat make monitoring impractical.

Lithospermum latifolium (American gromwell) - Limestone woods. One site beside Bannerfield Road. Map 1.

Lycopodium porophyllum (Rock clubmoss) - Shady, very shallow soil over sandstone. One site along Sand Cave Branch.

Magnolia macrophylla (big-leaved magnolia) - Seen in moist woods in three ravines near Civitan Park (one of these is on the Ewing Trail). Also on the north-facing slope of Cumberland Mountains near the White Rocks.

Maianthemum canadense (Canada mayflower) - The largest colony was found in a shaded area just back of the White Rocks, but also seen elsewhere in the general area. Reported in Cranfill 1981. Map 2.

Melampyrum lineare (cow wheat) - Common in a variety of habitats at high elevations in the eastern end of the Park.

Panax quinquefolius (ginseng) - Woods. Scattered throughout the Park.

Paronychia argyrocoma (silver whitlow-wort) - Sunny, shallow soil on sandstone. Found only on the White Rocks. Could be disturbed by heavy visitor use of the cliff tops. About 15 tufts observed. Map 2.

Philadelphus hirsutus (a mock orange) - Common on limestone cliffs. Seen once on sandstone.

Phlox amplifolia (large-leaved phlox) - Rich woods. Seen only along Lewis Hollow Trail. Could be adversely affected by flowerpicking by hikers to Skylight Cave.

Plantanthera flava - The specimen had a dried out flower which was wetted for identification. The specimen site was a rather dry forest north of U.S. 58 that might occasionally be flooded by Station Creek. A presumed *Plantanthera* (not yet flowering) was seen south of U.S. 58 in dry limestone woods near the cemetery. The plant was gone at the time of a revisit. Neither site is appropriate for *Plantanthera flava*. More study is needed.

Polygonum arifolium - Seen only at Chadwell Gap Trail Wet Area and another wet area about 50 meters west of the first site.

Rhododendron cumberlandense (Cumberland azalea) - Open oakwoods. Most common around the old tower site (just west of the White Rocks) but also seen in several other places on the south facing slope of Cumberland Mountain in the east end of the Park.

Ruellia purshiana - Seen once on the barrens above Cudjos Cave. Included on this list because if it is found in the TN side of the park, it would be a new species for Tennessee. Other areas in the Tennessee section of the Park have habitats similar to the barrens above Cudjos Cave.

Salvia urticifolia (a sage) - Limestone woods and barrens. Fairly common in Lee and Claiborne counties. Occasionally seen in non-limestone woods on the ridge top in Bell County.

Saxifraga michauxii (Michaux's saxifrage) - Often in moist or shady cracks in sandstone cliffs but sometimes under overhangs. Most common near the White Rocks but scattered elsewhere.

Silene ovata (a catchfly) - Forming large patches in several places along the Ridge Trail. Scattered elsewhere, mostly in the east end of the Park but also collected on a wooded limestone slope in Claiborne County.

Silene rotundifolia (round-leaved pink) - Probably scattered throughout on dry sandstone ledges. Common in an area below the Pinnacle. Occasionally on ledges below Chadwell Gap and the White Rocks.

Silphium terebinthinaceum (prairie dock) - Limestone barrens. Along the Cudjo Cave exit trail (4 plants) and at another site about 100 m further up the slope (2 plants). Map 1.

Solidago curtissii (Curtis' goldenrod) - Woods edges. Along the Ridge Trail.

Solidago flaccidifolia (a goldenrod) - Rich woods. At higher elevations in the eastern end of the Park. See Uttal 1984 for a discussion of this species in Virginia.

Solidago roanensis (Roan Mountain goldenrod) - Road and trail sides at higher elevations in the eastern end of the Park.

Spiranthes ovalis (a ladies tresses) - Immature woods. Found at three sites along Colson Lane near the Wilderness Road Campground.

Trillium undulatum (painted trillium) - Occasional with rhododendrons at higher elevations.

Vaccinium erythrocarpum (a blueberry) - High elevation woods. One bush just west of the White Rocks and a colony on the north facing slope behind the White Rocks. A flowering specimen would be good to confirm the identification. Map 2.

Veratrum parviflorum (a False Hellebore) - High elevation woods. North facing slopes near the crest of Cumberland Mountain between Chadwell Gap and the White Rocks. Not seen in flower but reported in Cranfill 1981.

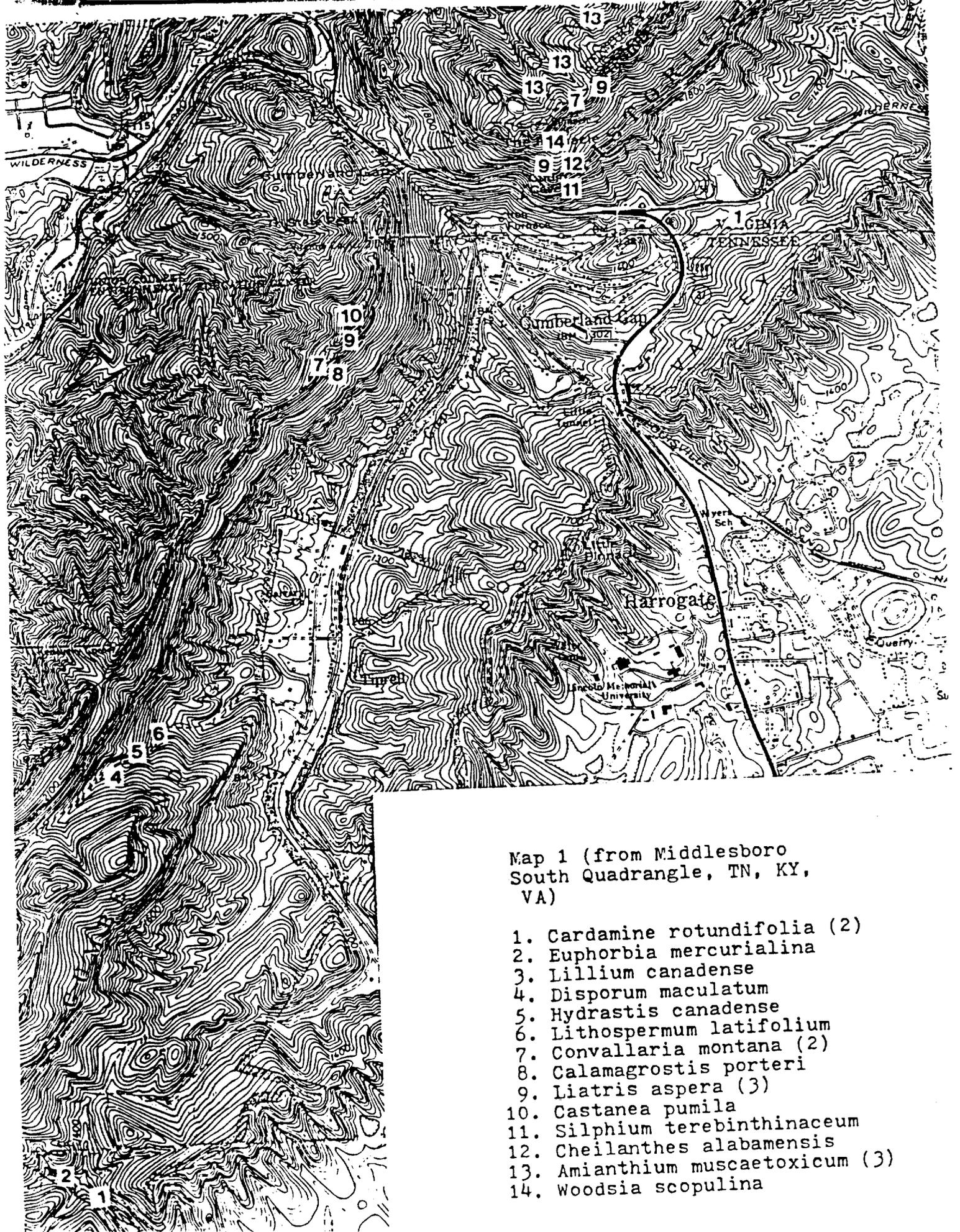
Woodsia scopulina (Mountain Cliff Fern) - Shaded cracks in the thinner bedded sandstone below the thicker bedded sandstone of the Pinnacle. At least three distinct sites in the area below the Pinnacle. Map 1.

APPENDIX D

LOCATION MAPS FOR PARK RARE PLANTS

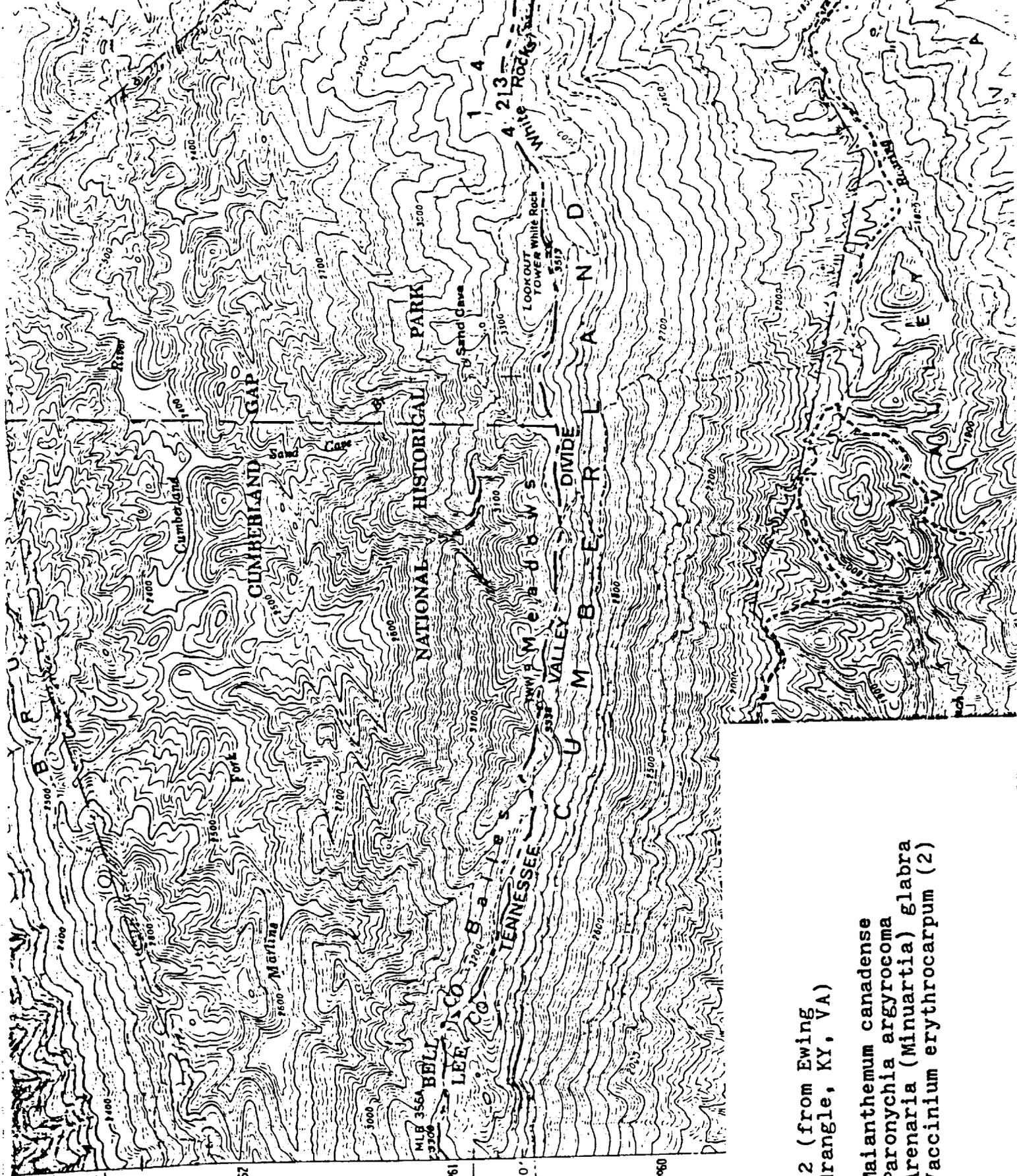
Included in the rare species mapped below are the species suggested for monitoring except *Helianthus atrorubens*, whose locations along roads are described in Appendix C.

It should be noted that plants from the rare plant list are distributed throughout the Park. Map 1 illustrates the concentration of rare species in the Bannerfield Road area and in the Cudjo Cave area. Map 2 shows the concentration at the White Rocks where a number of species grow together. The numbers are clustered around that site on the map. Numbers in parentheses indicate the number of locations for that species marked on the map.



Map 1 (from Middlesboro
South Quadrangle, TN, KY,
VA)

1. *Cardamine rotundifolia* (2)
2. *Euphorbia mercurialina*
3. *Lillium canadense*
4. *Disporum maculatum*
5. *Hydrastis canadense*
6. *Lithospermum latifolium*
7. *Convallaria montana* (2)
8. *Calamagrostis porteri*
9. *Liatris aspera* (3)
10. *Castanea pumila*
11. *Silphium terebinthinaceum*
12. *Cheilanthes alabamensis*
13. *Amianthium muscaetoxicum* (3)
14. *Woodsia scopulina*



Map 2 (from Ewing Quadrangle, KY, VA)

1. *Maianthemum canadense*
2. *Paronychia argyrocoma*
3. *Arenaria (Minuartia) glabra*
4. *Vaccinium erythrocarpum* (2)



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